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The land potential data base for Canada

Users' handbook

Canada

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The map on the cover has dots representing Agriculture Canada research establishments

The land potential data base for Canada

Users' handbook

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SUMMARY

The Land Potential Data Base is a computerized information base containing data on soil, climate, physiography, land use, crop growth rates, and potential crop yields. Basically conceived as a tool to aid scientists planning studies in land evaluation, the base enables the storage, retrieval, and manipulation of biophysical and crop modeling data.

This publication is organized in three sections. Section I explains the organization of the data base and describes how data can be manipulated and retrieved. Section II is a data dictionary which lists all variables alphabetically. Section III describes and defines the information contained in each variable.

RESUME

La banque de données sur les possibilités de production des terres est une banque informatique regroupant des données sur le sol, le climat, la physiographie, l'utilisation des terres, la croissance végétale et les possibilités de rendement. Au départ conçue pour aider les chercheurs à planifier leurs études sur l'évaluation des terres, cette banque permet la préservation, le retrait et le traitement des données biophysiques et des données de modélisation agricole.

La présente publication est divisée en trois. La première partie explique l'agencement des données et décrit la façon dont celles-ci peuvent être utilisées et récupérées. La partie II est un glossaire dans lequel on retrouvera la liste de toutes les variables, par ordre alphabétique. Enfin, la dernière partie décrit et définit les renseignements qui se rapportent à chaque variable.

INTRODUCTION

THE LAND POTENTIAL DATA BASE

The Land Potential Data Base is a computerized information base containing data on soil, climate, physiography, land use, land degradation, crop growth rates and potential crop yields for selected crops. These data are available for each area of Canada designated on the Soils of Canada Map. Conceived as a tool to aid in land evaluation, the data base enables the retrieval and manipulation of stored biophysical and crop modeling information. The present data base is an expansion of one originally developed to provide information about Canada for an FAO study on world crop production potentials.

As the Canadian contribution to the FAO project, a study was conducted on Canadian crop productivity potential (Dumanski and Stewart, 1981). The principles of the Canadian study were consistent with those of the FAO study, but adapted to the Canadian environment and using more detailed data (Stewart, 1981). The cartographic base of the Canadian project was the Soils of Canada map at a scale of 1:5,000,000 (Clayton et al. 1977).

In the Land Potential Data Base, information is recorded by Soil Map Unit as in the FAO study. The Soil Map Unit has a code identical to the soil map unit symbol on the Soils of Canada map. Each code identifies a unique area of land, with similar properties of soils, climate and landforms. There is an extended description covering each of the many properties of each map unit in the data base.

Soil classification data included in each map unit are as follows: the dominant, subdominant and significant soils and their modifiers; parent material and modifier; texture; and phase. Also included are data on: physiographic region, landforms, elevation, land use, soil capability for agriculture, map unit area, latitudinal and longitudinal locators, and FAO taxonomic identifiers.

The climatic data are derived from the 1941-70 Canada Normals (Atmospheric Environment Service, Environment Canada). Monthly normals provided by the AES, were obtained in the form of an 1290 equal area grid square system (Stewart, 1981). These squares are based on one degree increments of latitude, and represent an area of 10,000 km^2 each.

The methodology used for this study was developed by members of the Land Resource Research Institute and the Regional Development and International Affairs Branch both of Agriculture Canada. Details of this methodology can be found in Dumanski and Stewart (1981), Stewart (1981) and Coote et al., (1981).

Since the soil map unit, which has been used as the basis of the project, was intended for mapping at a scale of 1:5,000,000, use of these data at large scales could lead to inaccuracies.

ORGANIZATION OF THE DATA BASE

The Land Potential Data Base is resident on RAPID which is a relational data base management system. The structure of the relation can be compared to a simple two dimensional matrix, where fields (also called variables) form the vertical columns, and data records (groups of observations) form the horizontal rows. In this data base all data records are identified by the soil map unit designations as found on the Soil Map of Canada. The field names represent headings for the various types of information available for each map unit.

VARIABLES →

MAPUNIT (KEY)	LAND USE	LANDFORM	PARENT MATERIAL	GREAT GROUP	AREA
A1001	FIELD CROPS	PLAIN	LACUSTRINE	BROWN CHERNOZEMIC	37960
A1002	FIELD CROPS	PLAIN	LACUSTRINE	BROWN CHERNOZEMIC	47625
A1003	FIELD CROPS	PLAIN	AEOLIAN	BROWN CHERNOZEMIC	122197
A1004	FIELD CROPS	PLAIN	AEOLIAN	BROWN CHERNOZEMIC	40985
A1005	FIELD CROPS	PLAIN	AEOLIAN	BROWN CHERNOZEMIC	90043
A1007	WHEAT SPECIALITY	PLAIN	GLACIAL TILL	BROWN CHERNOZEMIC	77509

OBSERVATIONS ↓

Note that variable names appear in a more abreviated form in the data base (See Appendix I).

Appendix I contains the following information; field name, field description, unit of measurement, field type, codeset name (for coded fields) and format (for numeric fields). The format shows how the numeric values are stored in the RAPID relation and the number of decimal places (e.g. the 2 in Dec. (9,2) indicates two decimal places).

The data in each field are stored in the computer in one of several ways depending on the information in the field. In a character field the information is in the form of numerals and/or alphabetic letters (e.g. the MAPUNIT is expressed by a character field, such as A3070). The information can be displayed, or may be selected by specifying individual values, values greater than, or less than a specified value, or values within a specified range. During a selection of this type, the computer sorts the values on an alphanumeric basis.

In a numeric field the values stored are numbers (e.g. the values for RAINAPR, mean monthly rainfall for April, are stored in a numeric field). Values can be selected in the same manner as for a character field. In addition, the values can be added, using the SUM command (see page 6).

The values in coded fields consist of a limited number of defined codes (e.g. FAOTEXT is expressed as a coded field, for which the retrieval values are Coarse, Medium, Fine etc). Values can be displayed or selected by specifying a code. The values for data in the coded fields may be found in Appendix II, Codeset Values. The codeset name for each coded field is found in Appendix I.

DATA RETRIEVAL

Set-up for retrievals using DREAM

To retrieve data from the Land Potential Data Base, it is assumed that a user knows how to contact Datacrown Inc., with whom the CanSIS files are stored at this time, and can go to the READY command. A basic knowledge of TSO procedures would also be helpful, but is not essential.

Users unfamiliar with these procedures should contact the Land Resource Research Institute (LRRI) Central Experimental Farm, Ottawa. The LRRI will then provide details of the link to Datacrown, and procedures to obtain the READY mode. Appendix IV contains an example of the type of information the user might receive from LRRI.

A variety of generalized computer program packages can be used to access the Land Potential Data Base. The one discussed in this handbook is called DREAM (Direct Relational Access Method), which is part of the RAPID system. It is designed to provide on-line access to data in a relation and is simple to use by people who have little or no systems background. It allows a quick search of the data and is particularly useful for determining whether the data present are of interest and warrant further manipulation.

One of the major advantages of computerized data over published data is that they can be manipulated and arranged as desired for one or a series of applications. Data in the Land Potential Data Base can be searched and, if desired, restricted to limited map units and/or limited fields of information which are relevant to specific problems. The data can be extracted in a series of computer generated tables and charts, or they can be combined and manipulated with other data to support new interpretations. However, the methods necessary for data combination and manipulation using software other than DREAM are outside the scope of this manual.

The following section illustrates the ease with which computerized data bases, such as the Land Potential Data Base can be searched to determined whether or not the data of interest are present, and how the data can be manipulated and organized to support conclusions. The examples in this and the following sections are taken directly from the data base.

All information in this data base is designed to be retrieved using a software package called DREAM (Direct Relational Acccess

Method). This part of the User's Handbook deals with the instructions that are necessary to effect retrievals using this package. A complete session at the terminal is found in Example 1, page 11.

All computer-generated statements appear in upper case letters, and all statements entered at the terminal appear in lower case letters and are followed by pressing the RETURN key. Comments and explanations appear in parenthesis.

Step 1: Establish contact with Datacrown; and put the computer in READY mode

```
READY
ex sis01(lsisdrm) (This instructs the computer to use DREAM
                   in CanSIS (Canada Soil Information
                   System).
ARE YOU A NEW USER?
```

Step 2: yes (If no is entered here, the computer will move directly to DEFAULT PAGE WIDTH).

```
WELCOME TO THE WONDERFUL WORLD OF CANSIS   APRIL 25/80
IF YOU HAVE ANY PROBLEMS, QUESTIONS OR SUGGESTIONS  CALL:
      ALAIN DESROCHERS AT (613)593-7791 OTTAWA
DATA FILES AVAILABLE TODAY ARE:
     CP01 - CARTOGRAPHIC PRODUCTION MAP DATA
     CP02 - CARTOGRAPHIC PRODUCTION JOB ACCOUNTING
     CP03 - CARTOGRAPHIC PRODUCTION SESSION ACCOUNTING
     CP04 - CARTOGRAPHIC PRODUCTION TAPE INVENTORY
     CP05 - CARTOGRAPHIC PRODUCTION TIME AND MATERIALS ACCOUNTING
     E027 - PEI SOIL SERIES TABLE
     E028 - PEI DECODED SYMBOL LEGEND
     E029 - PEI FULLY EXPANDED LEGEND
     E030 - KING COUNTY EXPANDED LEGEND
     E040 - PRAIRIES FULLY EXTENDED LEGEND
     PMG1 - P/M NESTING ORDER
     PMI1 - P/M CROP YIELD AND ANALYSIS
     PMF1 - P/M FACTOR LEVEL
     PME1 - P/M FACTOR
     PMI3 - P/M NOTEBOOK DATA
     PMI4 - P/M CROP ENZYME
     SOIL - SOIL LEGEND
     PARK FILES: W001,W002,W003,W004,E005,E006,E007,E008,
                 E009,E010,E030,SOIL
DEFAULT PAGE WIDTH = 79 CHARACTERS
DEFAULT PAGE DEPTH = 20 LINES
WOULD YOU LIKE TO ALTER THESE ?
```

(Unless these defaults are changed, the largest block of data the computer will print at one time will be 79 characters wide and 20 rows deep. This is suitable for a video terminal. Hard copy terminals may use a width of up to 129 characters).

Step 3: yes (If no is entered here, the computer will move to FILES AVAILABLE).

```
ENTER PAGE WIDTH:
129
ENTER PAGE DEPTH:
50
```

(This is an arbitrary number of the user's choosing).

```
    FILES AVAILABLE ARE: CP01, CP02, CP03, CP04, CP05, E027,
                         E028, E029, E030, SOIL, PME1, PMF1, PMG1,
                         PMI1, PMI3, PMI4
                   ALSO: E004, E006, E007, E008, E009, E010, W001,
                         W002.
                          (This list may vary due to updates and
                           changes in the CanSIS system).

    FILE(S) FREED: SYS00006
    WOULD YOU LIKE TO ALLOCATE A REQUEST LIBRARY?
                         (This capability will be discussed in
                          Appendix V, and is not necessary for the
                          present purpose of familiarization with
                          DREAM and with this data base).

    no
    WHICH FILE WOULD YOU LIKE?
Step 4:  soil            (This is the name of the file used by the
                          Land Potential Data Base)

    FILE RELN NOT FREED, IS NOT ALLOCATED
    RAPID300 10JUL81 *** DREAM - RELATIONAL DISPLAY ***
    ?:          (this indicates that the computer is
                 waiting for a command)
```

Example 1 shows entry into DREAM from READY mode, as well as a sample request, and the return to READY from DREAM (page 11).

DREAM COMMANDS - Outlining the retrieval request

When the computer responds with ?:, it is a signal that it is ready for a command.

If ? is entered the computer will print a list of all the fields in the soil file that are available for interrogation or output.

Three primary commands are used to retrieve information. These are: DISPLAY, COUNT and SUM. They can be used alone or in combinations. However, when used in combination the display command will be executed first.

The display command will cause the computer to print out, in tabular form, the data in any field or group of fields which are specified (See Example 2, page 12).

The count command will give a total of the number of records in the data base. The count command can be used for retrieving information for any type of field. This command can also be used to show the distribution of data in coded fields (e.g. entering "count mapunit by greatgr" would result in the printout of the number of map units in each soil Great Group; see Example 3, page 13).

The sum command can be used to total the values in a selected field or fields, or to show the distribution of values in a selected coded field. The values in the field to be summed must be numeric. For example: "sum soilarea by greatgr" would result in the printout of the area of land in each soil Great Group, as well as a grand total of the soil areas (See Example 4, page 14).

It is also possible to place limiting parameters on the data to be retrieved. This is achieved with DREAM's Boolean facilities by using a value delimiter along with a primary command. Several delimiters may be used in one request, if desired, but each selection statement should be entered as a separate line. Without limiting the selection or setting criteria, all records (observations) in the field will be displayed. The following list of delimiters can be used in either symbol or letter form:

=	EQ (denotes equal to; use with coded, character or numeric fields)
	NE (denotes not equal to; use with coded, character or numeric fields)
>	GT (denotes greater than; use with numeric or character fields)
> =	GE (denotes greater than or equal to; use with numeric or character fields)
<	LT (denotes less than; use with numeric or character fields)
< =	LE (denotes less than or equal; use with numeric or character fields)

>< IN (denotes within range; use with numeric or character fields)

<> EX (denotes outside range; use with numeric or character fields)

For example, "prov = ont." will limit the data to that found in Ontario map units.

When appropriate, several values may be specified after a delimiter - these are interpreted by the computer as 'or' e.g. mapunit = A001, A1012, A2019. The computer will carry out the subsequent commands if the mapunit is A1001 or A1012 or A2019. Two delimiters on separate lines are interpreted as "and", e.g.

map unit in A1001, A3999
soil area le 150

is interpreted as if the mapunit is between A1001 and A3999 inclusive, and soilarea is less than or equal to 150.

If the computer is asked to print out a longer line of data than can be displayed by the designated page width during data retrieval, it will give the name of the first "over hanging" field and say:

(field name) DROPPED, LINE EXCEEDS MAXIMUM LENGTH

This means that data for the fields before the named field will be printed. Data for the other fields may be obtained by entering them as a separate request.

When all commands for one group of data have been entered, type go after the computer's ?: to initiate the retrieval. The method of retrieval will be displayed and data output will follow.

At the end of every 20 lines of data printout (more or fewer lines if default page depth was changed) the computer will print "'END' OR 'RETURN'". If the Return key is depressed, the output of data will continue. If end is entered, no further output for that request will be printed.

When all the data in a request have been printed, the computer will then print:

(RETRIEVAL COMPLETE)
ENTER 'END' OR NEXT REQUEST
?:

A new request may now be entered. It should be noted that the computer does not retain any of the limits or commands from a previous request.

MISTAKES AND ERROR MESSAGES

Mistakes are common during the course of a data request. If a mistake is discovered before the Return key is depressed, it

is possible to backspace to the error and enter the proper character. However, each character that is passed during backspacing will be erased. If the error is discovered after the Return key has been depressed, then depress the BREAK key followed by the RETURN key. The computer will now respond with:

ENTER SKIP, CONTINUE OR HALT:

SKIP - If SKIP or S is entered or if the Return Key is depressed, the preceeding request will be cancelled and the computer will be ready for a new request.

CONTINUE - If CONTINUE or C is entered, the computer will continue to process the data from the point at which the BREAK occurred. However, some data output may be lost.

HALT - If HALT or H is entered, the computer will move out of the soil file, but will still be in DREAM, and will respond with:

DO YOU WISH TO ACCESS ANY OTHER FILE?

The Land Potential Data Base may be re-accessed by responding with yes, and continuing from step 4 of the instructions to access the soil file (see page 5).

COLUMN NOT ON RELATION

This response after a command indicates that a variable or field has been entered which is not recognized by the computer. This is often caused by spelling or context (spacing) errors on input.

INVALID OPERATOR

This means that an invalid command has been given to the computer; check spelling and context.

CNH
Again, check for spelling errors.

DUPR RETURNED FROM $DEFR

This often occurs after a BREAK-SKIP sequence. Go should be entered, after which the computer will respond with:

REQUEST CONTAINS NO OUTPUT STATEMENT
(RETRIEVAL BEGINS:)
(RETRIEVAL COMPLETE)
ENTER 'END' OR NEXT REQUEST
?:
The request may now be re-entered.

EXITING FROM DREAM

The following steps should be taken to exit from DREAM and reenter READY mode after the retrieval from the final request

has been completed.

(RETRIEVAL COMPLETE)
ENTER 'END' OR NEXT REQUEST
?:

Step 1: end (This instructs the computer to move out of the Land Potential Data Base. The computer is still in DREAM).

DO YOU WISH TO ACCESS ANY OTHER FILE?

Step 2: no (This instructs the computer to move out of DREAM).

READY (The computer is now in READY mode at the Datacrown facilities. If no further input is made the computer will automatically log off after a waiting period of several minutes).

logoff (This logs the computer off immediately and is a more efficient use of computer time).

AB123CD Logged off at 14:22 ON MAY 10, 1982

(The computer is now no longer in contact with the terminal).

EXAMPLES

The examples in this section indicate a few of many possible retrievals which can be made using DREAM. The "request" statement in each example outlined the information that was required from the database and contains as well a brief description of the fields used in the request. There follows a copy of the actual dialogue between the user (lower case) follows and the computer (upper case), as well as the resulting output.

For a full description of field names which appear in the DREAM requests, please consult the Data Dictionary (Appendix I) or the Additional Definitions (Appendix III). Note that the DREAM data display does not indicate decimal places for numeric fields. Decimal places must be determined by refering to the Format column of Appendix I. If other software is used to access the data, the decimal point will be displayed.

Example 1

```
READY
ex sis01(lsisdrm)
ARE YOU A NEW USER ?
yes
 WELCOME TO THE WONDERFUL WORLD OF CANSIS   APRIL 25/80
 IF YOU HAVE ANY PROBLEMS, QUESTIONS OR SUGGESTIONS  CALL:
       ALAIN DESROCHERS AT (613)593-7791 OTTAWA
 DATA FILES AVAILABLE TODAY ARE:
      CP01 - CARTOGRAPHIC PRODUCTION MAP DATA
      CP02 - CARTOGRAPHIC PRODUCTION JOB ACCOUNTING
      CP03 - CARTOGRAPHIC PRODUCTION SESSION ACCOUNTING
      CP04 - CARTOGRAPHIC PRODUCTION TAPE INVENTORY
      CP05 - CARTOGRAPHIC PRODUCTION TIME AND MATERIALS ACCOUNTING
      E027 - PEI SOIL SERIES TABLE
      E028 - PEI DECODED SYMBOL LEGEND
      E029 - PEI FULLY EXPANDED LEGEND
      E030 - KING COUNTY EXPANDED LEGEND
      E040 - PRAIRIES FULLY EXTENDED LEGEND
      PMG1 - P/M NESTING ORDER
      PMI1 - P/M CROP YIELD AND ANALYSIS
      PMF1 - P/M FACTOR LEVEL
      PME1 - P/M FACTOR
      PMI3 - P/M NOTEBOOK DATA
      PMI4 - P/M CROP ENZYME
      SOIL - SOIL LEGEND
      PARK FILES: W001,W002,W003,W004,E005,E006,E007,E008,
                  E009,E010,E030,SOIL
DEFAULT PAGE WIDTH = 79 CHARACTERS
DEFAULT PAGE DEPTH = 20 LINES
WOULD YOU LIKE TO ALTER THESE ?
yes
ENTER PAGE WIDTH:
129
ENTER PAGE DEPTH:
50
FILES AVAILABLE ARE: CP01,CP02,CP03,CP04,CP05,E027,E028,E029,
                     E030,E040,SOIL,PME1,PMF1,PMG1,PMI1,PMI3,PMI4
            ALSO -   E005,E006,E007,E008,E009,E010,W001,W002,
                     W003,W004
FILE(S) FREED: SYS00006
WOULD YOU LIKE TO ALLOCATE A REQUEST LIBRARY?
no
WHICH FILE WOULD YOU LIKE ?
soil
RAPID300 10JUL81     *** DREAM - RELATIONAL DISPLAY ***          NOV 01, 1982
?:
mapunit = a3071 a3072
?:
display mapunit soilarea texture1 greatgr phase
?:
go
RETRIEVAL TO USE $KEYPRIM
(RETRIEVAL BEGINS:)
MAPUNIT         SOILAREA TEXTURE1        GREATGR         PHASE
-------------------------------------------------------------------
A3071              54901 SANDY           BK-CHERNO       BLANK
A3072            1023695 SANDY           BK-CHERNO       BLANK
(RETRIEVAL COMPLETE)
ENTER 'END' OR NEXT REQUEST
?:
end
DO YOU WISH TO ACCESS ANY OTHER FILE ?
no
READY
```

Example 2
(REQUEST)

For the province of Manitoba (prov = man.), show the soil map units (mapunit), area of each map unit (soilarea), soil Great Group (greatgr), parent material 1 (pm1), physiographic division (division), and physiographic region (region).

```
?:
prov = man.
?:
display mapunit soilarea greatgr pm1 division region
?:
go
RETRIEVAL TO USE SCANNING.
(RETRIEVAL BEGINS:)
```

MAPUNIT	SOILAREA	GREATGR	PM1	DIVISION	REGION
A3071	54901	BK-CHERNO	AEOLIAN	SASKATCHEWAN	INTERIOR
A3072	1023695	BK-CHERNO	FLUVIOLACU	SASKATCHEWAN	INTERIOR
A3087	979722	BK-CHERNO	TILL-DEP	SASKATCHEWAN	INTERIOR
A3090	1007596	BK-CHERNO	GLACIAL-TILL	SASKATCHEWAN	INTERIOR
A3105	230076	BK-CHERNO	GLACIAL-TILL	MANITOBA	INTERIOR
A3106	1148541	BK-CHERNO	GLACIAL-TILL	MANITOBA	INTERIOR
A3107	1274937	BK-CHERNO	LACUSTRINE	MANITOBA	INTERIOR
A3110	205509	BK-CHERNO	TILL-DEP	MANITOBA	INTERIOR
A3111	60933	BK-CHERNO	TILL-DEP	MANITOBA	INTERIOR
A3112	54064	BK-CHERNO	MOD-TILL	MANITOBA	INTERIOR
A4119	110502	DKGR-CHERNO	LACUSTRINE	MANITOBA	INTERIOR
A4126	25777	DKGR-CHERNO	GLACIAL-TILL	SASKATCHEWAN	INTERIOR
A4127	147568	DKGR-CHERNO	LACUSTRINE	MANITOBA	INTERIOR
A4134	590929	DKGR-CHERNO	MOD-TILL	MANITOBA	INTERIOR
A4135	1206721	DKGR-CHERNO	MOD-TILL	MANITOBA	INTERIOR
A4136	127537	DKGR-CHERNO	GLACIAL-TILL	SASKATCHEWAN	INTERIOR
C2040	510411	GR-LUVIS	GLACIAL-TILL	SASKATCHEWAN	INTERIOR
C2041	512052	GR-LUVIS	GLACIAL-TILL	SASKATCHEWAN	INTERIOR
C2072	1510156	GR-LUVIS	MOD-G-TILL	MANITOBA	INTERIOR
C2074	377831	GR-LUVIS	MOD-G-TILL	MANITOBA	INTERIOR
C2075	1510760	GR-LUVIS	LAKE-MOD-GT	MANITOBA	INTERIOR
C2090	67897	GR-LUVIS	GLACIAL-TILL	MANITOBA	INTERIOR
C2091	132589	GR-LUVIS	LACUSTRINE	MANITOBA	INTERIOR
C2127	8347129	GR-LUVIS	GLACIAL-TILL	KAZAN	KAZAN
C2128	2570380	GR-LUVIS	GLACIAL-TILL	KAZAN	KAZAN
D3138	316434	HF-PODZOL	GLACIAL-TILL	HUDSON-BAY	HUDSON
F1010	33198	OR-REGOS	GLACIAL-TILL	MANITOBA	INTERIOR
F1011	31773	OR-REGOS	GLACIAL-TILL	MANITOBA	INTERIOR
F1012	189442	OR-REGOS	GLACIAL-TILL	MANITOBA	INTERIOR
F1013	34253	OR-REGOS	GLACIAL-TILL	MANITOBA	INTERIOR
G1014	135816	HU-GLEYS	LACUSTRINE	MANITOBA	INTERIOR
G1015	290524	HU-GLEYS	ALLUVIAL-DEP	MANITOBA	INTERIOR
G1016	105373	HU-GLEYS	LAKE-MOD-GT	MANITOBA	INTERIOR
H1024	834106	FIBRIS-MESIS	GLACIAL-TILL	MANITOBA	INTERIOR
H1026	1233255	FIBRIS-MESIS	GLACIAL-TILL	SEVERN	JAMES
H1027	87109	FIBRIS-MESIS	LACUSTRINE	MANITOBA	INTERIOR
H1029	2419572	FIBRIS-MESIS	LACUSTRINE	KAZAN	KAZAN
H1030	3775069	FIBRIS-MESIS	LACUSTRINE	KAZAN	KAZAN
H1031	4720522	FIBRIS-MESIS	LACUSTRINE	SEVERN	JAMES
H1032	2552648	FIBRIS-MESIS	GLACIAL-TILL	SEVERN	JAMES
H3048	9333230	CR-FIBRIS	GLACIAL-TILL	HUDSON-LOW	HUDSON

```
(RETRIEVAL COMPLETE)
ENTER 'END' OR NEXT REQUEST
?:
```

Example 3
(REQUEST)
Count the number of soil map units (mapunit) in each soil Great Group (greatgr).

```
?:
count mapunit by greatgr
?:
go
RETRIEVAL TO USE SCANNING.
(RETRIEVAL BEGINS:)
FINAL COUNT MAPUNIT  BY GREATGR
-------------------------------
BK-CHERNO                    44
BK-SOLON                      5
BN-CHERNO                    25
BN-SOLON                      8
CR-FIBRIS                    14
CR-GLEYS                      7
CROR-REGOS                   81
CU-REGOS                      3
DKBN-CHERNO                  33
DKGR-CHERNO                  18
FIBRIS-MESIS                 34
GR-LUVIS                    111
GRBN-LUVIS                   18
HF-PODZOL                   148
HU-GLEYS                     19
OR-GLEYS                     18
OR-REGOS                     16
ORDY-BRUNIS                  30
OREU-BRUNIS                  29
ORML-BRUNIS                  20
ROCKLAND                     71
SOLOD                         3
* FINAL COUNT *             755
'END' OR RETURN

(RETRIEVAL COMPLETE)
ENTER 'END' OR NEXT REQUEST
?:
```

Example 4
(REQUEST)
Give the area of land (soilarea) covered by each soil Great Group (greatgr).

```
?:
sum soilarea by greatgr
?:
go
RETRIEVAL TO USE SCANNING.
(RETRIEVAL BEGINS:)
FINAL SUM SOILAREA BY GREATGR
-----------------------------
BK-CHERNO                20612841
BK-SOLON                  2011042
BN-CHERNO                10453628
BN-SOLON                  3116077
CR-FIBRIS                53716597
CR-GLEYS                  3979247
CROR-REGOS              193999610
CU-REGOS                  3668800
DKBN-CHERNO              11420552
DKGR-CHERNO               5753136
FIBRIS-MESIS             38382236
GR-LUVIS                 77979444
GRBN-LUVIS                5031650
HF-PODZOL               204575912
HU-GLEYS                  3804603
OR-GLEYS                 14531964
OR-REGOS                  8663075
ORDY-BRUNIS              37055298
OREU-BRUNIS              57372792
ORML-BRUNIS               3175824
ROCKLAND                133337728
SOLOD                     2508802
* FINAL TOTAL *         895150858
'END' OR RETURN

(RETRIEVAL COMPLETE)
ENTER 'END' OR NEXT REQUEST
?:
```

Example 5
(REQUEST)

For the province of Saskatchewan choose and display the map units having an actual growing season length (agsl) greater than 110 days. Show the growing season total rainfall (gstr), the workability parameter for wheat (wrkpwact), and the anticipated dry matter yield for wheat (apydwact) for these mapunits. Also, find the sum of the soil area for these mapunits, and show its distribution by Great Group (greatgr).

```
?;
prov = sask.
?;
agsl > 110
?;
display mapunit agsl gstr wrkpwact apydwact
?;
sum soilarea by greatgr
?;
go
RETRIEVAL TO USE SCANNING.
(RETRIEVAL BEGINS;)
```

MAPUNIT	AGSL	GSTR	WRKPWACT	APYDWACT
A1007	112	18570	950	16032
A1008	111	18479	950	11669
A1011	111	18096	950	11222
A1014	115	18940	950	15455
A1017	112	18425	950	11240
A1026	112	18557	950	11971
A2036	111	18557	950	18954
A2039	111	19388	950	20379
A2044	113	18663	950	13730
A2056	112	19120	950	15273
A3108	111	25022	930	33792
B1007	113	18658	950	14537
F1001	115	18940	0	0
F1002	115	18497	0	0
F1004	111	18646	950	13530
F1007	113	18658	950	13046

```
FINAL SUM SOILAREA BY GREATGR
```

BK-CHERNO	953506
BN-CHERNO	2930663
BN-SOLON	114077
DKBN-CHERNO	2644142
OR-REGOS	414859
* FINAL TOTAL *	7057247

```
'END' OR RETURN

(RETRIEVAL COMPLETE)
ENTER 'END' OR NEXT REQUEST
?;
```

ACKNOWLEDGEMENTS

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APPENDIX I

DATA DICTIONARY OF FIELD NAMES

The Data Dictionary of Field Names contains information about every variable currently in the Land Potential Data Base. These variables have been grouped into four main types of data: soil variables, climate variables, crop growth yield variables and land degradation variables. The field names are arranged alphabetically in each group.

All the possible values of fields defined as "coded" in the column Field Type are found in Appendix II. For example, the field DIVISION is a coded variable, as noted in the column Field Type. To find what values the field Division may contain, refer to the code set name (in this case PDIVISION), and then locate this name in Appendix II. All values in the field Division will be found here in the form in which they must be used or will be output during a computer retrieval. A short definition of each value is also included in Appendix II.

Additional information about some fields and codeset values is found in Appendix III.

SOIL VARIABLES

Field Name	Field Description	Field Type	Code set Name	Format
DIVISION	Physiography Division	coded	PDIVISION	
DOMST1	Dominant Soil Type	coded	SOILTYPE	
DOMST1M1	Dominant soil type 1 modifier 1	coded	SOILMOD	
DOMST1M2	Dominant soil type 1 modifier 2	coded	SOILMOD	
DOMST2	Dominant soil type 2	coded	SOILTYPE	
DOMST2M1	Dominant soil type 2 modifier 1	coded	SOILMOD	
DOMST2M2	Dominant soil type 2 modifier 2	coded	SOILMOD	
DOMST3	Dominant soil type 3	coded	SOILTYPE	
DOMST3M1	Dominant soil type 3 modifier 1	coded	SOILMOD	
DOMST3M2	Dominant soil type 3 modifier 2	coded	SOILMOD	
ELEVHI	Elevation - high	numeric		Bin(15,0)*

* These fields are stored in the computer in binary form, but will be automatically displayed in integer form during a DREAM retrieval.

Field Name	Field Description	Field Type	Code set Name	Format
ELEVLO	Elevation - low	numeric		Bin(15,0)*
FAONUMOD	FAO numerical modifier	character		
FAOSLCL	FAO slope class	coded	FAOSLCL	
FAOST1	FAO soil type 1	coded	FAOST	
FAOST2	FAO soil type 2	coded	FAOST	
FAOST3	FAO soil type 3	coded	FAOST	
FAOTEXT	FAO texture class	coded	FAOTEXT	
GREATGR	Soil unit great group	coded	GREATGR	
LANDFRM1	Landform 1	coded	LANDFRM	
LANDFRM2	Landform 2	coded	LANDFRM	
LANDFRM3	Landform 3	coded	LANDFRM	
LANDUSE1	Landuse 1	coded	LANDUSE	
LANDUSE2	Landuse 2	coded	LANDUSE	
LANDUSE3	Landuse 3	coded	LANDUSE	
LANDUSE4	Landuse 4	coded	LANDUSE	
LATDEG	Latitude in degrees	numeric		Bin(15)*
LATMIN	Latitude in minutes	numeric		Bin(15)*
LONGDEG	Longitude in degrees	numeric		Bin(15)*
LONGMIN	Longitude in minutes	numeric		Bin(15)*
MAPUNIT	Map unit	character		
PHASE	Phase	coded	PHASE	
PM1	Parent material 1	coded	PM	
PM2	Parent material 2	coded	PM	
PM3	Parent material 3	coded	PM	
PM4	Parent material 4	coded	PM	
PMMOD1	Parent material modifier 1	coded	PMMOD	

* These fields are stored in the computer in binary form, but will be automatically displayed in integer form during a DREAM retrieval.

Field Name	Field Description	Field Type	Codeset Name	Format
PMMOD2	Parent material modifier 2	coded	PMMOD	
PMMOD3	Parent material modifier 3	coded	PMMOD	
PMMOD4	Parent material modifier 4	coded	PMMOD	
PROV	Province	character		
REGION	Physiography Region	coded	PREGION	
SCCL11	Soil Capability Class 11*	coded	SCCL	
SCCL12	Soil Capability Class 12	coded	SCCL	
SCCL21	Soil Capability Class 21	coded	SCCL	
SCCL22	Soil Capability Class 22	coded	SCCL	
SCCL31	Soil Capability Class 31	coded	SCCL	
SCCL32	Soil Capability Class 32	coded	SCCL	
SCCL41	Soil Capability Class 41	coded	SCCL	
SCCL42	Soil Capability Class 42	coded	SCCL	
SCPC1	Soil Capability percent 1	coded	SCPC	
SCPC2	Soil Capability percent 2	coded	SCPC	
SCPC3	Soil Capability percent 3	coded	SCPC	
SCPC4	Soil Capability percent 4	coded	SCPC	
SCSCL111, 112, 121, 122, 211, 212, 221, 222, 311, 312, 321, 322	Soil Capability Subclass 111 (112, 121,etc.)	coded	SCSCL	
SIGST1	Significant soil type 1	coded	SOILTYPE	
SIGST1M1	Significant soil type 1 modifier 1	coded	SOILMOD	
SIGST1M2	Significant soil type 1 modifier 2	coded	SOILMOD	
SIGST2	Significant soil type 2	coded	SOILTYPE	

Note: The province codes are stored in the following forms: Alta., B.C., Man., N.B., N.S., N.W.T., Nfld., Ont., P.E.I., Que., Sask., Y.T. Correct use and placement of the period is necessary when specifying a province during a retrieval.

*This notation allows a dominant Capability Class (the first number) and a subdominant Capability Class (the second number) to be shown for each Soil Capability Percent - (See Appendix III).

Field Name	Field Description	Field Type	Codeset Name	Format
SIGST2M1	Significant soil type 2 modifier 1	coded	SOILMOD	
SIGST2M2	Significant soil type 2 modifier 2	coded	SOILMOD	
SIGST3	Significant soil type 3	coded	SOILTYPE	
SIGST3M1	Significant soil type 3 modifier 1	coded	SOILMOD	
SIGST3M2	Significant soil type 3 modifier 2	coded	SOILMOD	
SOILAREA	Area of soil unit (ha)	numeric		Bin(31,0)*
SOILUNIT	Soil map unit symbol	character		
SUBST1	Subdominant soil type 1	coded	SOILTYPE	
SUBST1M1	Subdominant soil type 1 modifier 1	coded	SOILMOD	
SUBST1M2	Subdominant soil type 1 modifier 2	coded	SOILMOD	
SUBST2	Subdominant soil type 1	coded	SOILTYPE	
SUBST2M1	Subdominant soil type 1 modifier 1	coded	SOILMOD	
SUBST2M2	Subdominant soil type 2 modifier 2	coded	SOILMOD	
TEXTURE1	Texture 1	coded	TEXTURE	
TEXTURE2	Texture 2	coded	TEXTURE	
TOPOCLAS	Topography class	coded	TOPOCLAS	
XCOORD	X coordinate (scale 1:5000000)	numeric		Dec(9,2)
YCOORD	Y coordinate (scale 1:5000000)	numeric		Dec(9,2)

* This field is stored in the computer in binary form but will automatically be displayed in integer form during a DREAM retrieval.

CLIMATE VARIABLES

Field Name	Field Description	Unit	Field Type	Codeset Name	Format
ACCPACT	Accumulated precitation for actual growing season length	mm	numeric		Dec(9,2)
ACCPEACT	Accumulated potential evapotranspiration for actual growing season length	mm	numeric		Dec (9,2)
ACCPE075 ACCPE090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Accumulated potential evapotranspiration for growing season length of 75 (90, 105 etc.) days	mm	numeric		Dec(9,2)
ACCP075, ACCP090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Accumulated precipitation for growing season length of 75 (90, 105 etc.) days	mm	numeric		Dec(9,2)
ACRIHI	Agroclimatic resource index high		coded	ACRI	
ACRILO	Agroclimatic resource index low		coded	ACRI	
AGSL	Actual growing season length	days	numeric		Bin(15)*
APARCD	Actual photosynthetically active radiation on clear days	(0.3 to 0.7 μ band) ($cal/cm^2/day$)	numeric		Dec(9,2)
APAROD	Actual photosynthetically active radiation on overcast days	(0.3 to 0.7 μ band) ($cal/cm^2/day$)	numeric		Dec(9,2)

* This field is stored in the computer in binary form, but will automatically be displayed in integer form during a DREAM retrieval.

Field Name	Field Description	Unit	Field Type	Codeset Name	Format
CAMUIACT	Climatic available moisture use index for actual growing season length	days	numeric		Dec(9,2)
CAMUI075, CAMUI090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Climatic available moisture useage index for growing season length of 75 (90, 105 etc.)	days	numeric		Dec(9,2)
CLIMMOD	Climatic modifier		coded	CLIMMOD	
GSPARCD	Growing season mean daily photosynthetically active radiation on clear days	(0.3 to 0.7 μ band) ($cal/cm^2/day$)	numeric		Dec(9,2)
GSPE	Growing season mean daily potential evapotranspiration	mm	numeric		Dec(9,2)
GSSOLAR	Growing season mean daily incoming solar radiation	(0.3 to 0.7 μ band) ($cal/cm^2/day$)	numeric		Dec(9,2)
GSTR	Growing season total rainfall	mm	numeric		Dec(9,2)
GSVP	Growing season mean daily vapour pressure	mb	numeric		Dec(9,2)
GSWIND	Growing season mean daily wind speed	cm/sec	numeric		Dec(9,2)
H2OCL1, H2OCL2	Aquic Regime 1,2		coded	MOISTURE	
H2OGSS	Moisture Growing Season Start		numeric		Dec(9,0)
H2OSUB1, H2OSUB2	Moist unsaturated Regime 1,2		coded	MOISTURE	
NOGRIDS	Number of AES grids in soil area		numeric		Bin(15)*

* This field is stored in the computer in binary form, but will automatically be displayed in integer form during a DREAM retrieval.

Field Name	Field Description	Unit	Field Type	Codeset Name	Format
PEJAN, PEFEB,	MAR, APR, JUN, JUL, AUG. SEP, OCT, NOV, DEC. Mean daily evapo-transpiration for Jan (Feb, Mar, etc.)	mm	numeric		Dec(9,2)
RAINJAN, RAINFEB,	MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC. Mean monthly rainfall for Jan (Feb, Mar, etc.)	mm	numeric		Dec(9,2)
SMDEFACT	Soil moisture deficit for actual growing season length	mm	numeric		Dec(9,2)
SMDEF075, SMDEF090,	105, 110, 120, 130, 140, 150, 160, 170, 180 Soil moisture deficit for growing season length of 75 (90, 105, etc.) days	mm	numeric		Dec(9,2)
SMRUNACT	Soil moisture runoff for actual growing season length	mm	numeric		Dec(9,2)
SMRUN075, SMRUN090,	105, 110, 120, 130, 140, 150, 160, 170, 180 Soil moisture runoff for growing season length of 75 (90, 105 etc.) days	mm	numeric		Dec(9,2)
SMSTOACT	Soil moisture in storage for actual growing season length	mm	numeric		Dec(9,2)
SMST0075, SMST0090,	105, 110, 120, 130, 140, 150, 160, 170, 180 Soil moisture in storage for growing season length of 75 (90, 105 etc.) days	mm	numeric		Dec(9,2)
SNOWJAN, SNOWFEB,	MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC. Mean monthly snowfall for Jan. (Feb, Mar etc.)	cm	numeric		Dec(9,2)

Field Name	Field Description	Unit	Field Type	Codeset Name	Format
SOLARJAN, SOLARFEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC.	Mean daily solar radiation for Jan (Feb, Mar etc.)	($cal/cm^2/day$)	numeric		Dec(9,2)
SUMOIST	Soil unit moisture class		coded	SUMCL	
SUTEMP	Soil unit temperature class		coded	SUTCL	
SUTMPMST	Soil unit temperature moisture class		coded	SUMTMCL	
TDAYGS	Mean daytime temperature for growing season	°C	numeric		Dec(9,2)
TEMPCL1, TEMPCL2	Soil climate temperature class 1, 2		coded	TEMPCL	
THERMGSS	Thermal start of growing season (Julian date)		numeric		Dec(9,2)
THERMGSE	Thermal growing season end (Julian date)		numeric		Dec(9,2)
THERMGSL	Thermal growing season length	days	numeric		Dec(9,2)
TMAXJAN, TMAXFEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC.	Maximum monthly air temperature for Jan (Feb, Mar etc.)	°C	numeric		Dec(9,2)
TMAXGS	Maximum temperature for growing season	°C	numeric		Dec(9,2)
TMEANGS	Temperature mean for growing season	°C	numeric		Dec(9,2)
TMEANJAN, TMEANFEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC.	Mean monthly air temperature for Jan (Feb, Mar etc.)	°C	numeric		Dec(9,2)
TMINJAN, TMINFEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC.	Minimum monthly air temperature for Jan (Feb, Mar etc.)	°C	numeric		Dec(9,2)

Field Name	Field Description	Unit	Field Type	Codeset Name	Format
TMINGS	Minimum temperature for growing season	°C	numeric		Dec(9,2)
VPJAN, VPFEB,	MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC. Mean daily vapour pressure for Jan (Feb, Mar etc.)	mb	numeric		Dec(9,2)
WINDJAN, WINDFEB,	MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC. Mean monthly wind speed for Jan (Feb, Mar etc.) at 10 m	cm/sec	numeric		Dec(9,2)

CROP GROWTH YIELD VARIABLES

Field Name	Field Description	Unit	Field Type	Format
ANBPBACT	Anticipated net biomass production of phaseolus bean for actual growing season length	kg/ha	numeric	Dec(9,1)
ANBPB075, ANBPB090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Anticipated net biomass production of phaseolus bean for growing season length of 75 (90, 105 etc.) days	kg/ha	numeric	Dec(9,1)
ANBPCACT	Anticipated net biomass production of corn for actual growing season length	kg/ha	numeric	Dec(9,1)
ANBPC075, ANBPC090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Anticipated net biomass production of corn for growing season length of 75 (90, 105 etc.) days	kg/ha	numeric	Dec(9,1)
ANBPPACT	Anticipated net biomas production of potato for actual growing season length	kg/ha	numeric	Dec(9,1)
ANBPP075, ANBPP090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Anticipated net biomass production of potato for growing season length of 75 (90, 105 etc.) days	kg/ha	numeric	Dec(9,1)
ANBPSACT	Anticipated net biomass production of soybean for actual growing season length	kg/ha	numeric	Dec(9,1)
ANBPS075, ANBPS090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Anticipated net biomass production of soybean for growing season length of 75 (90, 105 etc.) days	kg/ha	numeric	Dec(9,1)
ANBPWACT	Anticipated net biomass production of wheat for actual growing season length	kg/ha	numeric	Dec(9,1)
ANBPW075, ANBPW090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Anticipated net biomass production of wheat for growing season length of 75 (90, 105 etc.) days	kg/ha	numeric	Dec(9,1)
APYDBACT	Anticipated dry matter yield of phaseolus bean for actual growing season length	kg/ha	numeric	Dec(9,1)

Field Name	Field Description	Unit	Field Type	Format
APYDB075, APYDB090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Anticipated dry matter yield of phaseolus bean for growing season length of 75 (90, 105 etc.) days.	kg/ha	numeric	Dec(9,1)
APYDCACT	Anticipated dry matter yield of corn for actual growing season length	kg/ha	numeric	Dec(9,1)
APYDC075, APYDC090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Anticipated dry matter yield of corn for growing season length of 75 (90, 105 etc.) days	hg/ka	numeric	Dec(9,1)
APYDPACT	Anticipated dry matter yield of potato for actual growing season length	kg/ha	numeric	Dec(9,1)
APYDP075, APYDP090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Anticipated dry matter yield of potato for actual growing season length of 75(90, 105 etc.) days	kg/ha	numeric	Dec(9,1)
APYDSACT	Anticipated dry matter yield of soybean for actual growing season length	kg/ha	numeric	Dec(9,1)
APYDS075, APYDS090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Anticipated dry matter yield of soybean for growing season length of 75 (90, 105 etc.) days	kg/ha	numeric	Dec(9,1)
APYDWACT	Anticipated dry matter yield of wheat for actual growing season length	kg/ha	numeric	Dec(9,1)
APYDW075, APYDW090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Anticipated fresh weight yield of wheat for growing season length of 75 (90, 105 etc.) days	kg/ha	numeric	Dec(9,1)
APYFBACT	Anticipated fresh weight yield of phaseolus bean for actual growing season length	kg/ha	numeric	Dec(9,1)
APYFB075, APYFB090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Anticipated fresh weight yield of phaseolus bean for growing season length of 75 (90, 105 etc.) days	kg/ha	numeric	Dec(9,1)
APYFCACT	Anticipated dry fresh weight yield of corn for actual growing season length	kg/ha	numeric	Dec(9,1)

Field Name	Field Description	Unit	Field Type	Format
APYFC075, APYFC090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Anticipated fresh weight yield of corn for growing season length of 75 (90, 105 etc.) days	kg/ha	numeric	Dec(9,1)
APYFSACT	Anticipated fresh weight yield of soybean for actual growing season length	kg/ha	numeric	Dec(9,1)
APYFS075, APYFS090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Anticipated fresh weight yield of soybean for growing season length of 75 (90, 105 etc.) days	kg/ha	numeric	Dec(9,1)
APYFWACT	Anticipated fresh weight yield of wheat for actual growing season length	kg/ha	numeric	Dec(9,1)
APYFW075, APYFW090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Anticipated fresh weight yield of wheat for growing season length of 75 (90, 105 etc.) days	kg/ha	numeric	Dec(9,1)
CFDMBACT	Constraint-free dry matter yield of phaseolus bean for actual growing season length	kg/ha	numeric	Dec(9,1)
CFDMB075, CFDMB090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Constraint-free dry matter yield of phaseolus bean for growing season length of 75 (90, 105 etc.) days	kg/ha	numeric	Dec(9,1)
CFDMCACT	Constraint-free dry matter yield of corn for actual growing season length	kg/ha	numeric	Dec(9,1)
CFDMC075, CFDMC090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Constraint-free dry matter yield of corn for growing season length of 75 (90, 105 etc.) days	kg/ha	numeric	Dec(9,1)
CFDMPACT	Constraint-free dry matter yield of potato for actual growing season length	kg/ha	numeric	Dec(9,1)
CFDMP075, CFDMP090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Constraint-free dry matter yield of potato for growing season length of 75 (90, 105 etc.) days	kg/ha	numeric	Dec(9,1)
CFDMSACT	Constraint-free dry matter yield of soybean for actual growing season length	kg/ha	numeric	Dec(9,1)

Field Name	Field Description	Unit	Field Type	Format
CFDMS075, CFDMS090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Constraint-free dry matter yield of soybean for growing season length of 75 (90, 105 etc.) days	kg/ha	numeric	Dec(9,1)
CFDMWACT	Constraint-free dry matter yield of wheat for actual growing season length	kg/ha	numeric	Dec(9,1)
CFDMW075, CFDMW090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Constraint-free dry matter yield of wheat for growing season length of 75 (90, 105 etc.) days	kg/ha	numeric	Dec(9,1)
CFFWBACT	Constraint-free fresh weight yield of phaseolus bean for actual growing season length	kg/ha	numeric	Dec(9,1)
CFFWB075, CFFWB090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Constraint-free fresh weight yield of phaseolus bean for growing season length of 75 (90, 105 etc.) days	kg/ha	numeric	Dec(9,1)
CFFWCACT	Constraint-free fresh weight yield of corn for actual growing season length	kg/ha	numeric	Dec(9,1)
CFFWC075, CFFWC090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Contraint-free fresh weight yield of corn for growing season length of 75 (90, 105 etc.) days	kg/ha	numeric	Dec(9,1)
CFFWPACT	Contraint-free fresh weight yield of potato for actual growing season length	kg/ha	numeric	Dec(9,1)
CFFWP075, CFFWP090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Contraint-free fresh weight yield of potato for growing season length of 75 (90, 105 etc.) days	kg/ha	numeric	Dec(9,1)
CFFWSACT	Contraint-free fresh weight yield of soybean for actual growing season length	kg/ha	numeric	Dec(9,1)
CFFWS075, CFFWS090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Contraint-free fresh weight yield of soybean for growing season length of 75 (90, 105 etc.) days	kg/ha	numeric	Dec(9,1)
CFFWWACT	Contraint-free fresh weight yield of wheat for actual growing season length	kg/ha	numeric	Dec(9,1)
CFFWW075, CFFWW090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Contraint-free fresh weight yield of wheat for growing season length of 75 (90, 105 etc.) days	kg/ha	numeric	Dec(9,1)

Field Name	Field Description	Unit	Field Type	Format
CMRFBACT	Crop moisture response factor of phaseolus bean for actual growing season length	dimensionless	numeric	Dec(9,1)
CMRFB075, CMRFB090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Crop moisture response factor of phaseolus bean for growing season length of 75 (90, 105 etc.) days	dimensionless	numeric	Dec(9,1)
CMRFCACT	Crop moisture response factor of corn for actual growing season length	dimensionless	numeric	Dec(9,1)
CMRFC075, CMRFC090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Crop moisture response factor of corn for growing season length of 75 (90, 105 etc.) days	dimensionless	numeric	Dec(9,1)
CMRFPACT	Crop moisture response factor of potato for actual growing season length	dimensionless	numeric	Dec(9,1)
CMRFP075, CMRFP090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Crop moisture response factor of potato for growing season length of 75 (90, 105 etc.) days	dimensionless	numeric	Dec(9,1)
CMRFSACT	Crop moisture response factor of soybean for actual growing season length	dimensionless	numeric	Dec(9,1)
CMRF075, CMRFS090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Crop moisture response factor of soybean for growing season length of 75 (90, 105 etc.) days	dimensionless	numeric	Dec(9,1)
CMRFWACT	Crop moisture response factor of wheat for actual growing season length	dimensionless	numeric	Dec(9,1)
CMRFW075, CMRFW090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Crop moisture response factor of wheat for growing season length of 75 (90, 105 etc.) days	dimensionless	numeric	Dec(9,1)
CNBBACT	Constraint-free net biomass of phaseolus bean for actual growing season length	kg/ha	numeric	Dec(9,1)
CNBB075, CNBB090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Constraint-free net biomass of phaseolus bean for growing season length of 75 (90, 105 etc.) days	kg/ha	numeric	Dec(9,1)
CNBCACT	Constraint-free net biomass of corn for actual growing season length	kg/ha	numeric	Dec(9,1)

Field Name	Field Description	Unit	Field Type	Format
CNBC075, CNBC090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Constraint-free net biomass of corn for growing season length of 75 (90, 105 etc.) days	kg/ha	numeric	Dec(9,1)
CNBPACT	Constraint-free net biomass of potato for actual growing season length	kg/ha	numeric	Dec(9,1)
CNBP075, CNBP090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Constraint-free net biomass of potato for growing season length of 75 (90, 105 etc.) days	kg/ha	numeric	Dec(9,1)
CNBSACT	Constraint-free net biomass of soybean for actual growing season length	kg/ha	numeric	Dec(9,1)
CNBS075, CNBS090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Constraint-free net biomass production of soybean for growing season length of 75 (90,105 etc). days	kg/ha	numeric	Dec(9,1)
CNBWACT	Constraint-free net biomass production of wheat for actual growing season length	kg/ha	numeric	Dec(9,1)
CNBW075, CNBW090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Constraint-free net biomass of wheat for growing season length of 75 (90, 105 etc.) days	kg/ha	numeric	Dec(9,1)
DMMPBACT	% dry matter in main product of phaseolus bean for actual growing season length		numeric	Dec(9,3)
DMMPB075, DMMPB090, 105, 110, 120, 130, 140, 150, 160, 170, 180	% dry matter in main product of phaseolus bean for growing season length of 75 (90, 105 etc.) days		numeric	Dec(9,3)
DMMPCACT	% dry matter in main product of corn for actual growing season length		numeric	Dec(9,3)
DMMPC075, DMMPC090, 105, 110, 120, 130, 140, 150, 160, 170, 180	% dry matter in main product of corn for growing season length of 75 (90, 105 etc.) days		numeric	Dec(9,3)
DMMPPACT	% dry matter in main product of potato for actual growing season length		numeric	Dec(9,3)
DMMPP075, DMMPP090, 105, 110, 120, 130, 140, 150, 160, 170, 180	% dry matter in main product of potato for growing season length of 75 (90, 105 etc.) days		numeric	Dec(9,3)

Field Name	Field Description	Unit	Field Type	Format
DMMPSACT	% dry matter in main product of soybean for actual growing season length		numeric	Dec(9,3)
DMMPS075, DMMPS090, 105, 110, 120, 130, 140, 150, 160, 170, 180	% dry matter in main product of soybean for growing season length of 75 (90, 105 etc.) days		numeric	Dec(9,3)
DMMPWACT	% dry matter in main product of wheat for actual growing season length		numeric	Dec(9,3)
DMMPW075, DMMPW090, 105, 110, 120, 130, 140, 150, 160, 170, 180	% dry matter in main product of wheat for growing season length of 75 (90, 105 etc.) days		numeric	Dec(9,3)
HIBACT	Harvest Index of phaseolus bean for actual growing season length	dimensionless	numeric	Dec(9,3)
HIB075, HIB090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Harvest Index of phaseolus bean for growing season length of 75 (90, 105 etc.) days	dimensionless	numeric	Dec(9,3)
HICACT	Harvest Index of corn for actual growing season length	dimensionless	numeric	Dec(9,3)
HIC075, HIC090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Harvest Index of corn for growing season length of 75 (90, 105 etc.) days	dimensionless	numeric	Dec(9,3)
HIPACT	Harvest Index of potato for actual growing season length	dimensionless	numeric	Dec(9,3)
HIP075, HIP090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Harvest Index of potato for growing season length of 75 (90, 105 etc.) days	dimensionless	numeric	Dec(9,3)
HISACT	Harvest Index of soybean for actual growing season length	dimensionless	numeric	Dec(9,3)
HIS075, HIS090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Harvest Index of soybean for growing season length of 75 (90, 105 etc.) days	dimensionless	numeric	Dec(9,3)
HIWACT	Harvest Index of wheat for actual growing season length	dimensionless	numeric	Dec(9,3)
HIW075, HIW090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Harvest Index of wheat for growing season length of 75 (90, 105 etc.) days	dimensionless	numeric	Dec(9,3)

Field Name	Field Description	Unit	Field Type	Format
LAIBACT	Leaf Area Index of phaseolus beans for actual growing season length	dimensionless	numeric	Dec(9,3)
LAIB075, LAIB090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Leaf Area Index of phaseolus beans for growing season length of 75 (90, 105 etc.) days	dimensionless	numeric	Dec(9,3)
LAICACT	Leaf Area Index of corn for actual growing season length	dimensionless	numeric	Dec(9,3)
LAIC075, LAIC090, 105, 110, 120, 130, 140, 150 160, 170, 180	Leaf Area Index of corn for growing season length of 75 (90, 105 etc.) days	dimensionless	numeric	Dec(9,3)
LAIPACT	Leaf Area Index of potato for actual growing season length	dimensionless	numeric	Dec(9,3)
LAIP075, LAIP090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Leaf Area Index of potato for growing season length of 75 (90, 105 etc.) days	dimensionless	numeric	Dec(9,3)
LAISACT	Leaf Area Index for soybean for actual growing season length	dimensionless	numeric	Dec(9,3)
LAIS075, LAIS090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Leaf Area Index of soybean for growing season length of 75 (90, 105 etc.) days	dimensionless	numeric	Dec(9,3)
LAIWACT	Leaf Area Index for wheat for actual growing season length	dimensionless	numeric	Dec(9,3)
LAIW075, LAIW090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Leaf Area Index of wheat for growing season length of 75 (90, 105 etc.) days	dimensionless	numeric	Dec(9,3)
MCGRBACT	Maximum crop growth rate of phaseolus bean for actual growing season length	dimensionless	numeric	Dec(9,3)
MCGRB075, MCGRB090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Maximum crop growth rate of phaseolus bean for growing season length of 75 (90, 105 etc.) days	dimensionless	numeric	Dec(9,3)
MCGRCACT	Maximum crop growth rate of corn for actual growing season length	dimensionless	numeric	Dec(9,3)

Field Name	Field Description	Unit	Field Type	Format
MCGRC075, MCGRC090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Maximum crop growth rate of corn for growing season length of 75 (90, 105 etc.) days	dimensionless	numeric	Dec(9,3)
MCGRPACT	Maximum crop growth rate of potato for actual growing season length	dimensionless	numeric	Dec(9,3)
MCGRP075, MCGRP090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Maximum crop growth rate of potato for growing season length of 75 (90, 105 etc.) days	dimensionless	numeric	Dec(9,3)
MCGRSACT	Maximum crop growth rate of soybean for actual growing season length	dimensionless	numeric	Dec(9,3)
MCGRS075, MCGRS090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Maximum crop growth rate of soybean for growing season length of 75 (90, 105 etc.) days	dimensionless	numeric	Dec(9,3)
MCGRWACT	Maximum crop growth rate of wheat for actual growing season length	dimensionless	numeric	Dec(9,3)
MCGRW075, MCGRW090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Maximum crop growth rate of wheat for growing season length of 75 (90, 105 etc.) days	dimensionless	numeric	Dec(9,3)
MPRMCG1, MPRMCG2, 3, 4	Maximum photosynthesis rate main crop group 1 (2, 3, 4), from FAO (1978)	dimensionless	numeric	Dec(9,2)
NBPBACT	Net biomass production of phaseolus bean for actual growing season length	kg/ha	numeric	Dec(9,1)
NBPB075, NBPB090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Net biomass production of phaseolus bean for growing season length of 75 (90, 105 etc.) days	kg/ha	numeric	Dec(9,1)
NBPCACT	Net biomass production of corn for actual growing season length	kg/ha	numeric	Dec(9,1)
NBPC075, NBPC090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Net biomass production of corn for growing season length of 75 (90, 105 etc.) days	kg/ha	numeric	Dec(9,1)
NBPPACT	Net biomass production of potato for actual growing season length	kg/ha	numeric	Dec(9,1)

Field Name	Field Description	Unit	Field Type	Format
NBPP075, NBPP090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Net biomass production of potato for growing season length of 75 (90, 105 etc.) days	kg/ha	numeric	Dec(9,1)
NBPSACT	Net biomass production of soybean for actual growing season length	kg/ha	numeric	Dec(9,1)
NBPS075, NBPS090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Net biomass production of soybean for growing season length of 75 (90, 105 etc.) days	kg/ha	numeric	Dec(9,1)
NBPWACT	Net biomass production of wheat for actual growing season length	kg/ha	numeric	Dec(9,1)
NBPW075, NBPW090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Net biomass production of wheat for growing season length of 75 (90, 105 etc.) days	kg/ha	numeric	Dec(9,1)
SUGRNB, SUGRNC, SUGRNP, SUGRNS, SUGRNW	Percent of soil unit area not suitable for growing phaseolus bean, corn, potato, soybean and wheat respectively		numeric	Bin(15,0)*
SUGRSB, SUGRSC, SUGRSP, SUGRSS, SUGRSW	Percent of soil unit area suitable for growing phaseolus bean, corn, and potato, soybean, wheat respectively		numeric	Bin(15,0)*
SUGRWB, SUGRWC, SUGRWP, SUGRWS, SUGRWW	Percent of soil unit area well suited for growing phaseolus bean, corn, potato, soybean, wheat respectively		numeric	Bin(15,0)*
WRKPBACT	Workability parameter of phaseolus bean for actual growing season length		numeric	Dec(9,1)
WRKPB075, WRKPB090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Workability parameter of phaseolus bean for growing season length of 75 (90, 105 etc.) days		numeric	Dec(9,1)
WRKPCACT	Workability parameter of corn for actual growing season length		numeric	Dec(9,1)

* These fields are stored in the computer in binary form, but will be automatically displayed in integer form during a DREAM retrieval; the percentages are represented by a number from 0 to 10 (eg. 3 represents 30%).

Field Name	Field Description	Unit	Field Type	Format
WRKPC075, WRKPC090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Workability parameter of corn for growing season length of 75 (90, 105 etc.) days		numeric	Dec(9,1)
WRKPPACT	Workability parameter of potato for actual growing season length		numeric	Dec(9,1)
WRKPP075, WRKPP090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Workability parameter of potato for growing season length of 75 (90, 105 etc.) days		numeric	Dec(9,1)
WKRPSACT	Workability parameter of soybean for actual growing season length		numeric	Dec(9,1)
WRKPS075, WRKPS090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Workability parameter of soybean for growing season length of 75 (90, 105 etc.) days		numeric	Dec(9,1)
WRKPWACT	Workability parameter of wheat for actual growing season length		numeric	Dec(9,1)
WRKPW075, WRKPW090, 105, 110, 120, 130, 140, 150, 160, 170, 180	Workability parameter of wheat for growing season length of 75 (90, 105 etc.) days		numeric	Dec(9,1)

LAND DEGRADATION VARIABLES

Field Name	Field Description	Unit	Field Type	Codeset Name	Format
ATMODEP	Estimated mean atmospheric deposition (wet and dry) of substances affecting soil acidity.	ueq/100g soil/yr	numeric		Dec(2,0)
LIMEADD	Range of liming addition for agricultural land		coded	LIMEADD	
POINTRN	Depth of point rainfall for 1 hour observation for occurrence with a 10 year return period	mm	numeric		Dec(2,0)
RUNOFF	Mean annual unit-area water yield to stream channels	mm	numeric		Dec(4,0)
SMDEFANN	Mean annual soil water deficiency	mm	numeric		Dec(3,0)
SOILSENS	Soil sensitivity to long term acid precipitation		coded	SOILSENS	
WINDMAX	Wind speed maximum for 1 hour observation for occurrence with a 10 year return period	km/h	numeric		Dec(3,0)

APPENDIX II

DATA DICTIONARY OF CODED FIELD VALUES

This Appendix contains all the values for the coded fields in the Land Potential Data Base. The code set names are listed alphabetically, and refer to the code set name column in Appendix I. The values appear in the same form here as they will during a computer retrieval.

A short definition is included with each value. More complete definitions for some of the fields and codeset values can be found in Appendix III.

The value BLANK has been used to indicate that no information has been stored in the data base for that variable, for the map unit in question.

CODESET NAME	VALUES	DEFINITION
ACRI (AGROCLIMATIC RESOURCE INDEX)		
	LESS-THAN-1.00	
	1.00	
	1.33	
	1.50	
	1.67	
	1.83	
	2.00	
	2.17	
	2.33	
	2.50	
	2.67	
	2.83	
	3.00	
CLIMMOD (CLIMATE MODIFIER)		
	BLANK	
	COMPLEX	Complex of vertical zonation and aspect
	MAR-AND-COMP	Maritime and complex
	MARITIME	Maritime influence
FAOSLCL (FAO SLOPE CLASSES)		See Appendix III, page 57
	BLANK	
	HILLY	
	HILLY-STEEP	
	LEVEL	
	LEVEL-HILLY	
	LEVEL-STEEP	
	LVL-HLLY-STP	
	STEEP	
FAOST (FAO/UNESCO SOIL TYPE)		
	B	Cambisols
	BD	Dystric Cambisol
	BE	Eutric Cambisol

CODESET	VALUES	DEFINITON
FAOST (FAO/UNESCO SOIL TYPE)		
	BLANK	
	BX	Gelic Cambisol
	C	Chernozems
	CH	Haplic Chernozem
	CK	Calcic Chernozem
	CL	Luvic Chernozem
	E	Rendzinas
	G	Gleysols
	GD	Dystric Gleysol
	GE	Eutric Gleysol
	GH	Humic Gleysol
	GM	Mollic Gleysol
	GX	Gelic Gleysol
	I	Lithosols
	J	Fluvisols
	JD	Dystric Fluvisol
	JE	Eutric Fluvisol
	K	Kastanozems
	KH	Haplic Kastanozem
	KL	Luvic Kastanozem
	L	Luvisols
	LA	Albic Luvisol
	LO	Oothic Luvisol
	M	Grayzems
	MO	Orthic Grayzem
	O	Histosols
	OD	Dystric Histosol
	OE	Eutric Histosol
	OX	Gelic Histosol
	P	Podzols
	PO	Orthic Podzol
	R	Regosols
	RD	Dystric Regosol
	RE	Eutric Regosol
	RX	Gelic Regosol
	S	Solonetz
	SM	Mollic Solonetz
	T	Andosols
	TV	Vitric Andosol
FAOTEXT (FAO TEXTURE CLASSES)		See Appendix III, page 58
	BLANK	
	COARSE	
	FINE	
	FINE-COARSE	
	FINE-MED-CRS	
	FINE-MEDIUM	
	MEDIUM	
	MEDIUM-COARSE	
GREATGR (SOIL UNIT GREAT GROUP)		
	BK-CHERNO	Black Chernozemic
	BK-SOLON	Black Solonetz

CODESET	VALUES	DEFINITION
GREATGR (SOIL UNIT GREAT GROUP)		
	BN-CHERNO	Brown Chernozemic
	BN-SOLON	Brown Solonetz
	CR-FIBRIS	Cryic Fibrisol
	CR-GLEYS	Cryic Gleysol
	CROR-REGOS	Cryic Orthic Regosol
	CU-REGOS	Cumulic Regosol
	DKBN-CHERNO	Dark Brown Chernozemic
	DKGR-CHERNO	Dark Gray Chernozemic
	FIBRIS-MESIS	Fibrisol and Mesisol
	GR-LUVIS	Gray Luvisol
	GRBN-LUVIS	Gray Brown Luvisol
	HF-PODZOL	Humo-Ferric Podzol
	HU-GLEYS	Humic Gleysol
	OR-GLEYS	Orthic Gleysol
	OR-REGOS	Orthic Regosol
	ORDY-BRUNIS	Orthic Dystric Brunisol
	OREU-BRUNIS	Orthic Eutric Brunisol
	ORML-BRUNIS	Orthic Melanic Brunisol
	ROCKLAND	Rockland
	SOLOD	Solod
LANDFRM (LANDFORM)		
	ALLUVIAL-FAN	
	BLANK	
	CHANNEL	
	COLLUVIAL-FAN	
	ESCARPMENT	
	GLACIAL-VALLEY	
	HILLS	
	LAKE-BASIN	
	LAKE-BED	
	MORAINE	
	MOUNTAINS	
	PENEPLAIN	
	PLAIN	
	PLATEAU	
	SAND-DUNES	
	STRANDLINE	
	UPLANDS	
	UPLANDS-PLAT	
	VALLEY	
	VALLEY-TRAIN	
LANDUSE (LAND USE)		
	BARREN	Barren or Nearly Barren
	BLANK	
	BOG	Bog
	CITY	City
	FIELD-CROPS	Field Crops
	FORAGE	Forage
	FORBS-SHRUBS	Forbs and Shrubs
	FOREST	Forest
	GRAINS	Grains

CODESET	VALUES	DEFINITION
LANDUSE (LAND USE)		
	GRASS-F-S	Grasses, Forbs and Shrubs
	GRASS-F-S-I	Grasses, Forbs and Shurbs, Improved
	GRASS-FORBS	Grasses and Forbs
	GRASS-FORBS-I	Grasses and Forbs, Improved
	GRASSLAND-GRAZ	Grassland Grazing
	HORTIC-CR-P	Horticultural Crops Including Poultry
	HORTIC-CROPS	Horticultural Crops
	HORTICULTURE	Horticulture
	HYDRO-RES	Hydro Reservoir
	IMPROVED-PF	Improved Pasture and Forage
	IN-VALLEY	In Valley Cropland
	INDUSTRIAL	Industrial
	IRRIGATION-FIELD	Field Irrigation (Irrigated Field(s))
	IRRIGATION-WATER	Water Irrigation (Reservoir for Irrigation Water)
	MARSH	Marsh
	MILITARY-RES	Military Reservation
	MINES	Mines, Quarries, Sand and Gravel Pits
	MINOR	Minor Field Crops
	MIXED	Mixed
	MIXED-CROPS	Mixed Crops
	MIXED-GRAINS	Mixed Grains
	MIXED-GSSC	Mixed Grains and Small Seed Crops
	ORCHARDS	Orchards
	ORCHARDS-VINE	Orchards and Vineyards
	OUTDOOR-REC	Outdoor Recreation
	OUTDOOR-REC-U	Outdoor Urban Recreation
	PARK	Park
	PCON-FOR-T	Productive Coniferous Forest and Tundra
	PCON-UP-FOR	Productive Coniferous Upland Forest
	PCONIF-FOR	Productive Coniferous Forest
	PCONIF-FOR-M	Productive Coniferous Forest and Marsh
	PCONIF-LFOR	Productive Coniferous Lowland Forest
	PCONIF-LFOR-M	Productive Coniferous Lowland Forest and Marsh
	PCONIF-UFOR-T	Productive Coniferous Upland Forest and Tundra
	PHARD-FOREST	Productive Hardwood Forest
	PHARD-UP-FOR	Productive Hardwood Upland Forest
	PLOW-CON-S-FOR	Productive Coniferous Lowland Swamp Forest
	PLOW-FOREST	Productive Lowland Forest
	PLOW-FOREST-T	Productive Lowland Forest and Tundra
	PLOWS-S-FOR	Productive Lowland Swamp Forest
	PMIX-CON-FOR	Productive Mixed and Coniferous Forest
	PMIX-CON-S-FOR	Productive Mixed and Coniferous Swamp Forest
	PMIX-FOREST	Productive Mixed Forest
	PMIX-HARD-FOR	Productive Mixed and Hardwood Forest
	PMIX-UP-FOR	Productive Mixed Upland Forest

CODESET	VALUES	DEFINITION
LANDUSE (LAND USE)		
	PMIX-UP-LOW-FOR	Productive Mixed Upland and Lowland Forest
	PR-ALBERT-NP	Prince Albert National Park
	PROD-WOODLAND	Productive Woodland
	PSWAMP-FOR	Productive Swamp Forest
	PUP-FOREST	Productive Upland Forest
	RESERVOIR	Reservoir
	ROCK-UNVEG	Rock and Other Unvegetated Surfaces
	ROUGH-GRAZ	Rough Grazing
	ROUGH-GRAZING	Rough Grazing and Rangeland
	SAND-DUNE-B	Sand Flats, Dunes and Beaches
	SHRUBS	Shrubs
	SHRUBS-GRASS	Shrubs and Grasses
	SHRUBS-I	Shrubs, Improved
	SMALL-FRUITS	Small Fruits
	SPECIAL-CROPS	Special Crops
	SWAMP	Swamp
	SWAMP-M-B	Swamp, Marsh and Bog
	SWAMP-MARSH	Swamp or Marsh
	TOBACCO	Tobacco
	TUNDRA	Tundra
	UCON-FOR-T	Unproductive Coniferous Forest and Tundra
	UCON-UP-FOR	Unproductive Coniferous Upland Forest
	UCONIF-FOR	Unproductive Coniferous Forest
	UCONIF-FOR-M	Unproductive Coniferous Forest and Marsh
	UCONIF-LFOR	Unproductive Coniferous Lowland Forest
	UCONIF-LFOR-M	Unproductive Coniferous Lowland Forest and Marsh
	UCONIF-UFOR-T	Unproductive Coniferous Upland Forest and Tundra
	UHARD-FOREST	Unproductive Hardwood Forest
	UHARD-UP-FOR	Unproductive Hardwood Upland Forest
	ULOW-CON-S-FOR	Unproductive Lowland Coniferous Swamp Forest
	ULOW-FOREST	Unproductive Lowland Forest
	ULOW-FOREST-T	Unproductive Lowland Forest and Tundra
	ULOW-S-FOR	Unproductive Lowland Swamp Forest
	UMIX-CON-FOR	Unproductive Mixed and Coniferous Forest
	UMIX-CON-S-FOR	Unproductive Mixed and Coniferous Swamp Forest
	UMIX-FOREST	Unproductive Mixed Forest
	UMIX-HARD-FOR	Unproductive Mixed and Hardwood Forest
	UMIX-UP-FOR	Unproductive Mixed Upland Forest
	UMIX-UP-LOW-FOR	Unproductive Mixed Upland and Lowland Forest
	UNPR-WOODLAND	Unproductive Woodland
	URBAN	Urban
	UNSWAMP-FOR	Unproductive Swamp Forest
	UUP-FOREST	Unproductive Upland Forest
	VEGETABLES-F	Vegetables, Field Crop
	VEGETABLES-H	Vegetables, Horticultural

CODESET	VALUES	DEFINITION	
LANDUSE (LAND USE)			
	VINEYARDS	Vineyards	
	WATER	Water	
	WHEAT-MG	Wheat and Mixed Grains	
	WHEAT-SG	Wheat and Small Grains	
	WHEAT-SPEC	Wheat Speciality	
	WILDLIFE-GRAZ	Wildlife Grazing	
	WILDLIFE-SANC	Wildlife Sanctuary	
	WOODBUFFALO-NP	Woodbuffalo National Park	
	WOODLAND-GRAZ	Woodland Grazing	
LIMEADD (LIMING ADDITION RANGE)			
	0-100	0-100 kg/ha/yr	
	100-500	100-500 kg/ha/yr	
	500-1000	500-1000 kg/ha/yr	
	1000	1000 kg/ha/yr	
MOISTURE (MOISTURE REGIMES)			CMI(Climatic Moisture Index)
	AQUIC	Soil Saturated for Moderately Long Periods	-
	ARID	Soil Dry-Never Moist as Long as 90 Days	25
	BLANK		
	HUMID	Very Slight Water Deficits (2.5 - 6.4 cm)	74-84
	PERAQUIC	Soil Saturated for Long Periods of Time	-
	PERHUMID	Water Deficits 0-2.5 cm in Growing Season	84
	SEMIARID	Some Parts Dry During Growing Season Most Yrs. Deficit (13-14 cm)	46-58
	SUBAQUIC	Soil Saturated for Short Periods of Time	-
	SUBARID	Soil Dry-Periods up to 90 days when Soil Moist. Deficit 19-38 cm	25-45
	SUBHUMID	Significant Moisture Definit (6.5-17 cm) During Growing Season	59-73
	XERIC	Soil Dry for 45 Consecutive Days After W/S Solstice	-
PDIVISION (PHYSIOGRAPHY DIVISION)			
	ABITIBI	Abitibi Uplands	
	ALBERTA-PLAIN	Alberta Plain	
	ALBERTA-PLAT	Alberta Plateau	
	ANDERSON	Anderson Plain	
	ANNAPOLIS	Annapolis Lowland	
	ATHABASCA	Athabasca Plain	
	ATLANTIC-NEW	Atlantic Uplands of Newfoundland	
	ATLANTIC-NOVA	Atlantic Uplands of Nova Scotia	

CODESET	VALUES	DEFINITION
PDIVISION (PHYSIOGRAPHY DIVISION)		
	AXEL-HEIBERG	Axel Heiberg Mountains
	BACK	Back Lowland
	BAFFIN	Baffin Upland
	BAFFIN-CST	Baffin Coastal Lowland
	BATHURST	Bathurst Hills
	BEAR-SLAVE	Bear Slave Uplands
	BELCHER	Belcher Islands
	BOOTHIA-PLAIN	Boothia Plain
	BOOTHIA-PLAT	Boothia Plateau
	BRITISH	British Mountains
	C-ST-LAWRENCE	Central St. Lawrence Lowland
	CASCADE	Cascade Mountains
	CASSIAR	Cassiar Mountains
	CHALEUR	Chaleur Upland
	COAST	Coast Mountains
	COBALT	Cobalt Plain
	COLUMBIA-HIGH	Columbia Highlands
	COLUMBIA-MTS	Columbia Mountains
	COLVILLE	Colville Hills
	CORONATION	Coronation Hills
	CYPRESS	Cypress Hills
	DAVIS	Davis Highlands
	E-ST-LAWRENCE	East St. Lawrence Lowland
	EAST-ARM	East Arm Hills
	EASTERN-QUEBEC	Eastern Quebec Uplands
	EASTMAIN	Eastmain Lowland
	ESTEVAN	Estevan Coastal Plain
	EUREKA	Eureka Upland
	FORT-NELSON	Fort Nelson Lowland
	FOXE	Foxe Plain
	FRANKLIN	Franklin Mountains
	FRASER-BASIN	Fraser Basin
	FRASER-LOW	Fraser Lowland
	FROBISHER	Frobisher Upland
	GOERGE	George Plateau
	GEORGIA	Georgia Lowland
	GRANTLAND	Grantland Mountains
	GREAT-BEAR	Great Beat Plain
	GREAT-SLAVE	Great Slave Plain
	HALL	Hall Upland
	HAMILTON-HIGH	Hamilton Highlands
	HAMILTON-PLAT	Hamilton Plateau
	HAZELTON	Hazelton Mountains
	HECATE	Hecate Lowland
	HORTON	Horton Plain
	HUDSON-BAY	Hudson Bay
	HUDSON-LOW	Hudson Bay Lowland
	HYLAND	Hyland Plateau
	INTERIOR	Interior Plateau
	ISLAND-COASTAL	Island Coastal Plain
	KANIAPISKAU	Kaniapiskau Plateau
	KAZAN	Kazan Upland
	LABRADOR-HIGH	Labrador Highlands

CODESET	VALUES	DEFINITION
PDIVISION (PHYSIOGRAPHY DIVISION)		
	LABRADOR-HILL	Labrador Hills
	LAKE	Lake Plateau
	LANCASTER	Lancaster Plateau
	LARCH	Larch Plateau
	LAURENTIAN	Laurentian Highlands
	LIARD-PLAIN	Liard Plain
	LIARD-PLAT	Liard Plateau
	MACKENZIE-DEL	Mackenzie Delta
	MACKENZIE-MTS	Mackenzie Mountains
	MACKENZIE-PLN	Mackenzie Plain
	MANITOBA	Manitoba Plain Manitoba Escarpment
	MARITIME	Maritime Plain
	MEALLY	Meally Mountains
	MECATINA	Mecatina Plateau
	MEGANTIC	Megantic Hills
	MELVILLE-PLAT	Melville Plateau
	MELVILLE-PLN	Melville Plain
	MISTASSINI	Mistassini Hills
	N-ROCKY-MT-TR	Northern Rocky Mountain Trench
	N-ROCKY-MTS	Northern Rocky Mountains
	NAHWITTI	Nahwitti Lowland
	NANAIMO	Nanaimo Lowland
	NASS	Nass Basin
	NEW-BRUNSWICK	New Brunswick Highlands
	NEWFOUNDLAND-H	Newfoundland Highland
	NEWFOUNDLAND-L	Newfoundland Central Lowland
	NIPIGON	Nipigon Plain
	NO-DIV-SPECIFIED	No Division Specified
	NOTRE-DAME	Notre Dame Mountains
	NOVA-SCOTIA	Nova Scotia Highlands
	OGILVIE	Ogilvie Mountains
	OLD-CROW	Old Crow Range
	OMINECA	Omineca Mountains
	PARRY	Parry Plateau
	PEACE-RIVER	Peace River Lowland
	PEEL-PLAIN	Peel Plain
	PEEL-PLAT	Peel Plateau
	PELLY	Pelly Mountains
	PENOKEAN/POVUNG	Penokean Hills or Povingnituk Hills
	PORCUPINE-PLAT	Porcupine Plateau
	PORCUPINE-RNGS	Porcupine Ranges
	PORT-ARTHUR	Port Arthur Hills
	QUEEN-CHAR-LOW	Queen Charlotte Lowland
	QUEEN-CHAR-RNG	Queen Charlotte Ranges
	RICHARDSON	Richardson Mountains
	RICHMOND	Richmond Hills
	ROCKY-MTS-FOOT	Rocky Mountain Foothills
	S-ROCKY-MT-TR	Southern Rocky Mountain Trench
	S-ROCKY-MTS	Southern Rocky Mountains
	SASKATCHEWAN	Saskatchewan Plain Missouri Coteau
	SCOTIA-SHELF	Scotia Shelf
	SELWYN	Selwyn Mountains
	SEVERN	Severn Upland

CODESET	VALUES	DEFINITION
FDIVISION (PHYSIOGRAPHY DIVISION)		
	SHAKWAK	Shakwak Trench
	SHALER	Shaler Mountains
	SKEENA	Skeena Mountains
	SOUTHAMPTON	Southampton Plain
	ST-ELIAS	St-Elias Mountains
	STIKINE	Stikine Plateau
	SUGLUK	Sugluk Plateau
	SUTTON	Sutton Mountains
	SVERDRUP	Sverdrup Lowland
	TAIGA	Taiga Ranges
	THELON	Thelon Plain
	TINTINA	Tintina Trench
	VANCOUVER-IS	Vancouver Island Ranges
	VICTORIA-ALB	Victoria and Alberta Mountains
	VICTORIA-LOW	Victoria Lowland
	W-ST-LAWRENCE	West St. Lawrence Lowland
	WAGER	Wager Plateau
	WERNECKE	Wernecke Mountains
	WHALE	Whale Lowland
	YUKON-COASTAL	Yukon Coastal Plain
	YUKON-PLAT	Yukon Plateau
PHASE (PHASE)		
	BLANK	
	RKY-STNY	Rocky and Stony
	ROCKY	Bedrock Exposure
	STONY	Fragments 15 cm in Diameter
PM (CHARACTER OF PARENT MATERIAL)		
	AEOLIAN	Aeolian
	ALLUVIAL-DEP	Alluvial Deposits
	ALLUVIAL-LAC	Alluvial Lacustrine
	ALLUVIUM	Alluvium
	BEACH-DEP	Beach Deposits
	BEDROCK	Bedrock
	BEDROCK-IM	Bedrock (Igneous, Metamorphic)
	BEDROCK-IMS	Bedrock (Igneous, Metamorphic, Sedimentary)
	BLANK	
	COLLUVIAL-DEP	Colluvial Deposits
	COLLUVIUM	Colluvium
	DELTAIC-DEP	Deltaic Deposits
	FLUVIAL	Fluvial
	FLUVIAL-LAC	Fluvial Lacustrine
	FLUVIAL-OUT	Fluvial Outwash
	FLUVIOLACU	Fluviolacustrine
	GLACIAL-TILL	Glacial Till
	GLACIAL-TL-AD	Glacial Till With Alluvial Deposits
	GLACIAL-TL-FS	Glacial Till With Glaciofluvial Sands
	GLACIOFLUVIAL	Glaciofluvial
	GLACIOLAC	Glaciolacustrine
	GLACIOMARINE	Glaciomarine
	LACUSTRINE	Lacustrine

CODESET	VALUES	DEFINITION
PM (CHARACTER OF PARENT MATERIAL)		
	LACUSTRINE-CD	Lacustrine Clay Deposits
	LACUSTRINE-SIS	Lacustrine Sediments With Inclusions of Sand
	LAKE-MOD-GT	Lake Modified Glacial Till
	LOESS	Loess
	MARINE-CLAYS	Marine Clays
	MARINE-DEP	Marine Deposits
	MARINE-SANDS	Marine Sands
	MARINE-SED	Marine Sediments
	MOD-G-TILL	Modified Glacial Till
	MOD-TILL	Modified Till
	ORGANIC-DEP	Organic Deposits
	OUTWASH	Outwash
	PEAT	Peat
	ROCKLAND-I	Rockland (Igneous)
	ROCKLAND-IM	Rockland (Igneous, Metamorphic)
	ROCKLAND-IMS	Rockland (Igneous, Metamorphic, Sedimentary)
	ROCKLAND-IS	Rockland (Igneous, Sedimentary)
	ROCKLAND-M	Rockland (Metamorphic)
	ROCKLAND-S	Rockland (Sedimentary)
	ROCKLAND-UNSP	Rockland (Unspecified)
	SALINE-TILL	Saline Till
	SAND-INC	Sand Inclusions
	SANDS-G-TILL	Sands Over Glacial Till
	SANDSTONE	Sandstone
	SCREE	Scree
	TILL-DEP	Till Deposits
	TILL-MOD-SHL	Till Modified by Shale
	VOLCANIC-ASH	Volcanic Ash
PMMOD (CHARACTER OF PARENT MATERIAL MODIFIER)		
	BLANK	
	CALCAREOUS	Calcareous
	E-CALCAREOUS	Extremely Calcareous
	M-CALCAREOUS	Moderately Calcareous
	N-CALCAREOUS	Non Calcareous
	S-CALCAREOUS	Strongly Calcareous
	W-CALCAREOUS	Weakly Calcareous
PREGION (PHYSIOGRAPHIC REGION)		
	APPALACHIAN	Appalachian Region
	ARCTIC-CST	Arctic Coastal Plains
	ARCTIC-LOW	Arctic Lowlands
	ATLANTIC	Atlantic Continental Shelf
	BROOKS-RNG	Cordilleran Region Brooks Range Area
	CENTRAL	Cordilleran Region C. Plateau and Mountain Area
	COAST-MTS	Cordilleran Region Coast Mountail Area
	COASTAL-LOW	Cordilleran Region Coastal Lowland
	DAVIS	Davis Region
	HUDSON	Hudson Region
	INNUITIAN	Innuitian Region

CODESET	VALUES	DEFINITION
PREGION (PHYSIOGRAPHIC REGION)		
	INTERIOR	Interior Plateau
	JAMES	James Region
	KAZAN	Kazan Region
	LAURENTIAN	Laurentian Region
	MACKENZIE	Cordilleran Region Mackenzie Mountain Area
	NORTHERN	Cordilleran Region N. Plateau and Mountain Area
	OUTER-MTS	Cordilleran Region Outer Mountain Area
	PORCUPINE	Cordilleran Region Porcupine Mountain Area
	ROCKY-MTS	Cordilleran Region Rocky Mountain Area
	SOUTHERN	Cordilleran Region S. Plateau and Mountain Area
	ST-LAWRENCE	St. Lawrence Lowlands
SCCL (SOIL CAPABILITY CLASS)		
	BLANK	
	0	Organic soils (Note: This value is letter 'O' not a zero
	U	Unmapped areas
	1	Soils in this class have no significant limitations in use for crops
	2	Soils in this class have moderate limitations that restrict the range of crops or require moderate conservation practices
	3	Soils in this class have moderately severe limitations that restrict the range of crops or require special conservation practices
	4	Soils in this class have severe limitations that restrict the range of crops or require special conservation practices or both
	5	Soils in this class have very severe limitations that restrict their capability to producing perennial forage crops, and improvement practices are feasible
	6	Soils in this class are capable only of producing perennial forage crops, and improvement practices are not feasible
	7	Soils in this class have no capability for arable culture or permanent pasture
SCPC (SOIL CAPABILITY PERCENTAGE)		
	BLANK	
	10%	10% Percentage of area in the
	100%	100% map unit in a specified Soil
	20%	20% Capability Class.

CODESET	VALUES	DEFINITION
SCPC (SOIL CAPABILITY PERCENTAGE)		
	30%	30%
	40%	40%
	50%	50%
	60%	60%
	70%	70%
	80%	80%
	90%	90%
SCSCL (SOIL CAPABILITY SUBCLASS)		
	A	Droughtiness or aridity as a result of climate
	BLANK	
	D	Undesirable soil structure, low permeability
	E	Past damage from erosion
	F	Low natural fertility
	H	Adverse climate as a result of cold temperatures
	I	Periodic inundation by streams and lakes
	M	Deficient soil moisture
	N	Salinity
	P	Stoniness
	R	Shallowness to bedrock
	S	A combination of two or more or the subclasses D, F, M and N
	T	Adverse relief because of steepness or pattern of slopes
	V	A pattern of wet (W) and moisture deficit (M) soils very intimately associated
	W	Excessive soil moisture
	X	An accumulation of two or more adverse characteristics that individually would not affect the class rating
SOILMOD (SOIL SUBGROUP MODIFIER)		
	BLANK	
	CARBON	Carbonated
	CRYIC	Frozen perennially
	GLEYED	Affected by gleysation
	GRUMIC	Self-mulching
	LITHIC	Near bedrock, bedrock within 160 cm in organic soils
	PLACIC	Thin black or dark red horizon cemented by iron
	SALINE	Contains enough soluable salts to interfere with growth of most crop plants

CODESET	VALUES	DEFINITION
SOILSENS (SOIL SENSITIVITY TO ACID PRECIPITATION)		
	NON-SENSITIVE	Nonsensitive - soil exchangeable bases exceeds 15 meq/100g soil (or less than 10% of exchangeable bases could be depleted in 25 years)
SOILSENS (SOIL SENSITIVITY TO ACID PRECIPITATION)		
	MOD-SENSITIVE	Moderately sensitive - soil exchange able bases are 6-15 meq/100g soil (or 10-25% of exchangeable bases could be depleted in 25 years)
	HIGH-SENSITIVE	Highly sensitive - soil exchangeable bases are less than 6 meq/100g soil (or more than 25% of exchangeable bases could be depleted in 25 years)
SOILTYPE (SOIL SUBGROUP)		
	AK-SOLON	Alkaline Solonetz
	APDY-BRUNIS	Alpine Dystric Brunisol
	APEU-BRUNIS	Alpine Eutric Brunisol
	BIGRBN-LUVIS	Bisequa Gray Brown Luvisol
	BK-CHERNO	Black Chernozem
	BK-SOLOD	Black Solod
	BK-SOLON	Black Solonetz
	BLANK	
	BN-CHERNO	Brown Chernozem
	BN-SOLOD	Brown Solod
	BN-SOLON	Brown Solonetz
	BRGR-LUVIS	Brunisolic Gray Luvisol
	BRGRBN-LUVIS	Brunisolic Gray Brown Luvisol
	BRUNISOLIC	Brunisolic
	CABK-CHERNO	Calcareous Black Chernozem
	CABN-CHERNO	Calcareous Brown Chernozem
	CADKBN-CHERNO	Calcareous Dark Brown Chernozem
	CADKGR-CHERNO	Calcareous Dark Gray Chernozem
	CHERNO	Chernozemic
	CR-FIBRIS	Cryic Fibrisol
	CU-REGOS	Cumulic Regosol
	DGDY-BRUNIS	Degraded Dystric Brunisol
	DGEU-BRUNIS	Degraded Eutric Brunisol
	DGML-BRUNIS	Degraded Melanic Brunisol
	DKBN-CHERNO	Dark Brown Chernozem
	DKGR-CHERNO	Dark Gray Chernozem
	DKGR-LUVIS	Dark Gray Luvisol
	DY-BRUNIS	Dystric Brunisol
	EL-GLEYS	Eluviated Gleysol
	ELBK-CHERNO	Eluviated Black Chernozem
	ELBN-CHERNO	Eluviated Brown Chernozem
	ELDKBN-CHERNO	Eluviated Dark Brown Chernozem
	EU-BRUNIS	Eutric Brunisol
	FE-GLEYS	Fera Gleysol
	FEEL-GLEYS	Fera Eluviated Gleysol
	FEHU-GLEYS	Fera Humic Gleysol
	FH-PODZOL	Ferro Humic Podzol

CODESET	VALUES	DEFINITION
SOILTYPE (SOIL SUBGROUP)		
	FIBRISOL	Fibrisol
	FOLISOL	Folisol
	GLEYS	Gleysol
	GLEYSOLIC	Gleysolic
	GR-LUVIS	Gray Luvisol
	GR-SOLOD	Gray Solod
	GR-SOLON	Gray Solonetz
	GRBN-LUVIS	Gray Brown Luvisol
	HF-PODZOL	Humo Ferric Podzol
	HU-GLEYS	Humic Gleysol
	HU-PODZOL	Humic Podzol
	HUEL-GLEYS	Humic Eluviated Gleysol
	HUMISOL	Humisol
	LOHUEL-GLEYS	Low Humic Eluviated Gleysol
	LUVISOLIC	Luvisolic
	MESISOL	Mesisol
	MIFH-PODZOL	Mini Ferro Humic Podzol
	MIHF-PODZOL	Mini Humo Ferric Podzol
	ML-BRUNIS	Melanic Brunisol
	OR-GLEYS	Orthic Gleysol
	OR-REGOS	Orthic Regosol
	ORBK-CHERNO	Orthic Black Chernozem
	ORBN-CHERNO	Orthic Brown Chernozem
	ORDKBN-CHERNO	Orthic Dark Brown Chernozem
	ORDKGR-CHERNO	Orthic Dark Gray Chernozem
	ORDY-BRUNIS	Orthic Dystric Brunisol
	OREU-BRUNIS	Orthic Eutric Brunisol
	ORFH-PODZOL	Orthic Ferro Humic Podzol
	ORGANIC	Organic
	ORGR-LUVIS	Orthic Gray Luvisol
	ORGRBN-LUVIS	Orthic Gray Brown Luvisol
	ORHF-PODZOL	Orthic Humo Ferric Podzol
	ORHU-GLEYS	Orthic Humic Gleysol
	ORHU-PODZOL	Orthic Humic Podzol
	ORML-BRUNIS	Orthic Melanic Brunisol
	ORSM-BRUNIS	Orthic Sombric Brunisol
	PLHU-PODZOL	Plagic Humic Podzol
	PODZOLIC	Podzolic
	RE-GLEYS	Rego Gleysol
	REBK-CHERNO	Rego Black Chernozem
	REBN-CHERNO	Rego Brown Chernozem
	REDKBN-CHERNO	Rego Dark Brown Chernozem
	REDKGR-CHERNO	Rego Dark Gray Chernozem
	REGOS	Regosol
	REGOSOLIC	Regosolic
	REHU-GLEYS	Rego Humic Gleysol
	ROCKLAND	Rockland
	SDBK-CHERNO	Solodic Black Chernozem
	SDBN-CHERNO	Solodic Brown Chernozem
	SDDKBN-CHERNO	Solodic Dark Brown Chernozem
	SDDKGR-CHERNO	Solodic Dark Gray Chernozem
	SDDKGR-LUVIS	Solodic Dark Gray Luvisol
	SDORGR-LUVIS	Solodic Orthic Gray Luvisol

CODESET	VALUES	DEFINITION
SOILTYPE (SOIL SUBGROUP)		
	SM-BRUNIS	Sombric Brunisol
	SMFH-PODZOL	Sombric Ferro Humic Podzol
	SMHF-PODZOL	Sombric Humo Ferric Podzol
	SNBK-CHERNO	Solonetzic Black Chernozem
	SNBN-CHERNO	Solonetzic Brown Chernozem
	SNDKBN-CHERNO	Solonetzic Dark Brown Chernozem
	SNDKGR-CHERNO	Solonetzic Dark Gray Chernozem
	SOLOD	Solod
	SOLON	Solonetz
	SOLONETZIC	Solonetzic
SUMCL (SOIL MOISTURE CLASSIFICATION)		
	BLANK	See Appendix III, page 60
	PERHUMIC/HUMID	
	SEMIARID	
	SUBARID	
	SUBHUMID	
SUTCL (SOIL TEMPERATURE CLASSIFICATION)		
	ARCTIC	See Appendix III, page 60
	BLANK	
	BOREAL	
	CRYOBOREAL	
	MESIC	
	SUBARCTIC	
SUTMCL (SOIL TEMP-MOIST. CLASSIFICATION)		
	BLANK	
	HUM/ARC	Perhumic/Humid-Arctic
	HUM/BOR	Perhumic/Humid-Boreal
	HUM/CRY	Perhumid/Humid-Cryoboreal
	HUM/MES	Perhumic/Humid-Mesic
	HUM/SUBARC	Perhumid/Humid-Subarctic
	SEMIAR/ARC	Semiarid-Arctic
	SEMIAR/BOR	Semiarid-Boreal
	SEMIAR/CRY	Semiarid-Cryoboreal
	SEMIAR/MES	Semiarid-Mesic
	SEMIAR/SUBARC	Semiarid-Subarctic
	SUBAR/ARC	Subarid-Arctic
	SUBAC/BOR	Subarid-Boreal
	SUBAR/CRY	Subarid-Cryoboreal
	SUBAR/MES	Subarid-Mesic
	SUBAR/SUBARC	Subarid-Subarctic
SUTMCL (SOIL TEMP-MOIST. CLASSIFICATION)		
	SUBHUM/ARC	Subhumid-Arctic
	SUBHUM/MES	Subhumid-Mesic
	SUBHUM/BOR	Subhumid-Boreal
	SUBHUM/CRY	Subhumid-Cryoboreal
	SUBHUM/SUBARC	Subhumid-Subarctic

CODESET	VALUES	DEFINITION	
TEMPCL (SOIL CLIMATE TEMPERATURE CLASS)			
	BLANK		
	COLD	Cold	Cryoboreal
	COLD-M-COLD	Cold to Moderately Cold	Cryoboreal
	COOL	Cool	Boreal
	COOL-M-COOL	Cool to Moderately Cool	Boreal
	E-COLD	Extremely Cold	Arctic
	M-COLD	Moderately Cold	Cryoboreal
	M-COOL	Moderately Cool	Boreal
	M-WARM	Moderately Warm	Mesic
	M-WARM-WARM	Moderately Warm to Warm	Thermic
	MILD	Mild	Mesic
	MILD-M-WARM	Mild to Moderately Warm	Mesic
	V-WARM-HOT	Very Warm to Hot	Hyperthermic
TEXTURE (TEXTURE)			
	BLANK		
	CLAYEY	The fine earth contains 35% or more clay by weight and particles 2 mm - 25 cm occupy less than 35% by volume	
	LOAMY	The texture of the fine earth includes loamy very fine sand, very fine sand, and finer textures with less than 35% clay; particles 2mm - 25 cm occupy less than 35% of volume	
	SANDY	The texture of the fine earth includes sands and loamy sands, exclussive of loamy very fine sand and very fine sand textures, particles 2 mm - 25 cm occupy less than 35% by volume	
TOPOCLAS (TOPOGRAPHY SLOPE DOMINANT)			
	LEVEL	0% TO 9% slope	
	ROLLING	9% TO 30% slopes on 40% or more of area. The remainder is mainly 0 to 10% slopes	
	STEEP	Over 30% slope on 10% or more of area so distributed as to seriously affect land use	

APPENDIX III

ADDITIONAL DEFINITIONS

AGROCLIMATIC RESOURCE INDEX (ACRI)

The agroclimatic resource index (ACRI) provides an approximate method for quantitatively comparing the agroclimatic aspects of the land base in different parts of Canada. It is calculated by considering growing season length, temperature and moisture as they relate to crop yields.

The index is based on long term records of hay yields as a means of comparison (since the hay crop can potentially utilize the full growing season and is grown across Canada). Index values range from 3.00 for Kent-Essex counties to a low of 1.00 for the Northwest Territories. The index is based on a growing season which is defined as the period in days between the last killing spring frost (-2.2°C) and the first killing fall frost, with downward adjustments for Maritime climates for inadequate summer heat and in the Prairie regions for aridity.

The variables ACRIHI and ACRILO give the high and low ACRI readings (based on a 3.00 - 1.00 scale) for each soil map unit (Williams 1975).

The ACRI values for each map unit were defined by superimposing a map of ACRI isolines onto the Soils of Canada map, and selecting the lowest and highest values of the isolines surrounding each map unit (Dumanski and Stewart 1981).

ANTICIPATED NET BIOMASS PRODUCTION (ANBP)

Constraint-free net biomass production corrected for crop growth rate, soil moisture deficits, soil quality and fall workday probabilities (see Dumanski and Stewart 1981).

ANTICIPATED DRY MATTER YIELD (APYD)

Dry matter yield obtained when the anticipated net biomass production (ANBP) is multiplied by the Harvest Index (Stewart 1981).

ANTICIPATED FRESH WEIGHT YIELD (APYF)

The dry matter yield corrected for moisture content. For example, the fresh weight yields for corn, phaseolus bean, soybean and wheat assume a moisture content of 15%; for potato the water content is assumed to be 68.5%.

CLIMATIC AVAILABLE MOISTURE USE INDEX (CAMUI)

Expressed simply, CAMUI represents the ratio of actual evapotranspiration to potential evapotranspiration during the growing season. Broadly speaking, CAMUI values were determined by monitoring the daily change in soil moisture over the growing season, taking into consideration precipitation, evapotranspiration, and runoff. Various soil moisture holding capacities, determined by the texture of the soil are taken into consideration. The calculation procedure is outlined in detail by Stewart (1981).

TABLE 1. RELATIONSHIPS AMONG CROP YIELD & BIOMASS ESTIMATES*

		BIOMASS PRODUCTION	HARVESTED YIELD	
		DRY WEIGHT	FRESH WEIGHT	DRY WEIGHT
UNRESTRICTED	CONSTRAINT-FREE	CNB (Constraint-free net biomass production)		
	RESTRICTED BY MCGR (Maximum crop growth rate)	NBP (Net biomass production)	CFFW (Constraint-free fresh weight yield)	CFDM (Constraint-free dry matter yield)
MOST RESTRICTED	RESTRICTED BY MCGR moisture deficits, soil quality, and fall workday probabilities.	ANBP (Anticipated net biomass production)	APYF (Anticipated fresh weight yield)	APYD (Anticipated dry matter yeild)

* This illustrates the relationships among the field names used to describe three levels of crop yields.

CONSTRAINT-FREE NET BIOMASS PRODUCTION (CNB)

The gross biomass production less the loss for respiration in the absense of all yield reducing constraints. This figure is generated using the de Wit (1965) model and assumes a Leaf Area Index (LAI) of 5.

CONSTRAINT-FREE DRY MATTER YIELD (CFDM)

Dry matter yield of the harvestable portion of a crop that can be produced under given climatic conditions, taking into account the Maximum Crop Growth Rate (MCGR). This can also be viewed as the genetic potential or agroclimatic potential of the crop (Dumanski and Stewart 1981) (i.e. CNB reduced by MCGR x HI).

CONSTRAINT-FREE FRESH WEIGHT YIELD (CFFW)

Contraint-free dry matter yield corrected for moisture content (15% - wheat, soybean, phaseolus bean, corn; 68.5% - potato) and restricted by MCGR.

CROP MOISTURE RESPONSE FACTOR (CMRF)

This is the relationship between relative yield and relative evapotranspiration under conditions of moisture deficit. Values were derived following the procedures described by Doorenbos and Kassam (1979).

DOMINANT SOIL TYPE (DOMST)

The soil subgroup or association of subgroups which occupy more than 40% of the area of a map unit. Space has been provided for listing a maximum of three subgroups within the dominant soil type: DOMST1, DOMST2, DOMST3. The values in these fields display, from left to right, the soil subgroup, Great group and Order (eg. ELDKBN- CHERNO is an Eluviated Dark Brown Chernozemic soil).

DOMINANT SOIL TYPE MODIFIERS (DOMST M)

These represent land factors which are not included in the taxonomic classification, but which are an important consideration for land use. Up to two modifiers may be used with each dominant soil type.

FAO NUMERICAL MODIFIER (FAONUMOD)

This refers to associated soils in the soil unit which occupy at least 20% of the map unit. For example, in LC5-3a the figure "5" is the numerical modifier. See FAO-UNESCO Soil Map of the World, Vol. 1, Legend FAO, 1974.

FAO SLOPE CLASS (FAOSLCL)

The FAO slope class, indicates the dominant relief or slope of a soil association. Three classification (symbols a, b and c) are used:

a. level to gently undulating: dominant slopes ranging between 0-8 percent;

b. rolling to hilly: dominant slopes ranging between 8-30 percent;

c. steeply dissected to mountainous: dominant slopes over 30 percent.

FAO SOIL TYPE1 (FAOST1)

This refers to the dominant soil for each FAO soil map unit.

FAO SOIL TYPE2 (FAOST2)

Associated soils representing more than 20% of the map unit area.

FAO SOIL TYPE3 (FAOST3)

These are soils which represent less than 20% of the soil map unit area.

FAO TEXTURE (FAOTEXT)

Texture is the relative proportion of sand, silt and clay, of the dominant soil for each soil map unit. Texture classes are:

Coarse texture: sands, loamy sands and sandy loams with less than 18 percent clay, and more than 65 percent sand.

Medium texture: sandy loams, loams, sandy clay loams, silt loams with less than 35 percent clay and less than 65 percent sand; the sand fractions may be as high as 82 percent if a minimum of 18 percent clay is present.

Fine texture: clays, silty clays, sandy clays, clay loams and silty clay loams with more than 35 percent clay.

Where two or three texture names appear, this means that all named textures are present in that map unit.

HARVEST INDEX (HI)

The portion of a crop's net biomass that is economically useful, defined as the anticipated dry matter yield divided by the anticipated net biomass production.

LEAF AREA INDEX (LAI)

A variable indicating the leaf area covered by a crop per unit of surface area occupied by the crop

LIMING ADDITION (LIMEADD)

The amount of lime needed annually to counteract natural soil acidity and the effects of acid precipitation.

MAP UNIT (MAPUNIT)

Soil map units are identified by unique symbols on the Soils of Canada map. The initial letter of the symbol indicates the major soil

order of the dominant soil in the map unit. The number following the letter indicates the great group. The number under the taxonomic map symbol refers to a specific soil unit mapped. For example A1/1 signifies a unit of Brown Chernozemic soil, specific area 1. In the MAPUNIT field of the data base, the area identifier is converted to a three digit number (in this case 001) following the soil great group. The field SOILUNIT displays the conventional symbol used on the soils of Canada Map. So the computer printout for this soil map unit in each field would be:

MAPUNIT A1001
SOILUNIT A1/1

In cases where a map unit crosses provincial boundaries, it has been arbitrarily assigned to the province in which the largest proportion of its area is found.

MAXIMUM CROP GROWTH RATE (MCGR)

Maximum crop growth rate in relation to de Wit's (1965) standard crop growth rate which assumes a Leaf Area Index (LAI) of 5. If the crop LAI is less than 5, MCGR assumes a value of less than one, and the net biomass production has to be corrected downward using this factor.

MAXIMUM PHOTOSYNTHESIS RATE FOR MAIN CROP GROUP (MPRMCG)

The crops in this data base fall into two groups according to their photosynthesis pathways as follows: GROUPI - potato, phaseolus bean, wheat, soybean; GROUPIV - corn. See FAO (1978) for attributes of each group.

MOISTURE GROWING SEASON START (H2OGSS)

Date when precipitation first exceeds half the potential evapotranspiration.

NET BIOMASS PRODUCTION (NBP)

The gross biomass production less the loss from respiration.

NUMBER OF AES GRIDS IN SOIL AREA (NOGRIDS)

The variable NOGRIDS indicates the number of climate grids squares used to calculate the climate of each map unit.

PHASE (PHASE)

Expresses rockiness or stoniness of a soil unit.

SOIL CAPABILITY CLASS (SCCL)

This was derived by overlaying the Soil Capability for Agriculture Map onto the Soil Map of Canada (scale 1:1,000,000) and estimating the proportion of each capability class in each soil map unit. Fields have been provided to show up to four dominant (represented by the first digit) and two subdominant (represented by the second digit) capability classes for each map unit. If the map unit area was originally composed

of a number of capability classes, each covering less than ten percent of the total map unit area, these capabilities were re-combined and factored to select a representative class.

SOIL CAPABILITY PERCENTAGE (SCPC)

This is a visual estimate of the percentage of the total map unit occupied by each dominant capability class.

SOIL CAPABILITY SUBCLASS (SCSCL)

Represents up to two soil capability subclasses (represented by the last digit) for each dominant-subdominant combination of soil capability classes (represented by the first two digits).

SOIL MOISTURE CLASSIFICATION (SUMCL)

Perhumid	**	Soil moist all year, seldom dry.
	*	No significant water deficits in the growing season. Water deficits $\leq$ 2.5 cm. Climatic Moisture Index (CMI) > 84.
Humid	**	Soil not dry in any part for as long as 90 consecutive days in most years.
	*	Very slight deficits in the growing season. Water deficits 2.5- < 6.4 cm. CMI 74-84.
Subhumid	**	Soil dry in some parts when soil temperature is $\geq$ 5°C in some years.
	*	Significant deficits within the growing season. Water deficits 6.4- < 12.7 cm. CMI 59-73.
Semiarid	**	Soil dry in some parts when soil temperature is $\geq$ 5°C in most years.
	*	Moderately severe deficits in the growing season. Water deficits 12.7- <19.1 cm. CMI 46-58.
Subarid	**	Soil dry in some or all parts most of the time when the soil tempeature is $\geq$ 5°C. Some periods as long as 90 consecutive days when the soil is moist.
	*	Severe growing season deficits. Water deficits 19.1-38.1 cm in BOREAL and CRYOBOREAL classes, 19.1- <50.8 cm) in MESIC or warmer classes. CMI 25-45.

SOIL TEMPERATURE CLASSIFICATION (SUTCL)

Arctic
Extremely Cold
** Mean annual soil temperature < -7°C
** Mean summer soil temperature < 5°C

* Growing season $\geq$ 5°C, < 15 days
\- Thermal period $\geq$ 15°C, none
Regions in this class have continuous permafrost usually within a depth of 1 m.

Subarctic
Very Cold
** Mean annual soil temperature -7 to < 2°C
** Mean summer soil temperature 5 to < 8°C
* Growing season $\geq$ 5°C, 120 days
* Growing season degree-days $\geq$ 5°C, < 555
\- Thermal period $\geq$ 15°C, none
Regions in this class have widespread permafrost. Some profiles do not have permafrost within a depth of 1 m. Alpine soils are included in this class.
Cryoboreal
Cold to Moderately Cold
** Mean annual soil temperature 2 to < 8°C
** Mean summer soil temperature 8 to < 15°C
* Growing season $\geq$ 5°C; 120 to 220 days
* Growing season degree-days $\geq$ 5°C, 555 to < 1250
\- Thermal period $\geq$ 15°C, no significant days
\- Thermal period degree-days $\geq$ 15°C, < 33
Soils with aquic regions may remain frozen for portions of the growing season. Organic soil having discontinuous or localized permafrost should be classified in Subarctic, very cold.

Boreal
Cool to Moderately Cool
** Mean annual soil temperature 5 to < 8°C
** Mean summer soil temperature 15 to < 18°C
* Growing season $\geq$ 5°C, 170 to < 220 days
* Growing season degree-days $\geq$ 5°C, 1250 to < 1720
\- Thermal period $\geq$ 15°C, < 120 days
\- Thermal period degree-days $\geq$ 15°C, 33 to 222

Mesic
Mild to Moderately Warm
** Mean annual soil temperature 8 to < 15°C
** Mean summer soil temperature 15 to < 22°C
* Growing season $\geq$ 5°C, 200 to 365 days
* Growing season degree-days $\geq$ 5°C, 1720 to 2775
\- Thermal period $\geq$ 15°C, < 180 days
\- Thermal period degree-days $\geq$ 15°C, 167 to 666

** Primary classifier for class; in accordance with criteria estabished for the FAO/UNESCO Soil Climate Map of North America, measured at a depth of 50 cm.
* Secondary classifier for Soil Climate Map of Canada.
\- Supplementary Information.

SIGNIFICANT SOIL TYPE (SIGST)

These are significant soil inclusions within the map unit which make up ten to twenty percent of the soil map unit. Fields have been provided for up to three significant soil types and up to two modifiers for each SIGST in each map unit.

SUITABILITY CLASSIFICATION (SUGR)

This shows the percentage (reduced to a number from 0 to 10) of soil area in each soil map unit that is well suited, suited and not suited for specific crops. The percentages were evaluated by taking into account both climate and Soil Capability Classification (Dumanski and Stewart 1981).

Well Suited - soils with no/or minor limitations for the production of the crop under consideration

Suited - Soils with moderate limitations that markedly affect production of the crop but not to the extent of making the land unsuited

Not Suited - soils with major limitations making production not possible, or at best, very limited.

THERMAL GROWING SEASON (THERMGS)

This is the period in days when the mean minimum air temperature is 5°C. This represents the average date of the last spring and first fall killing frosts with a 50% probability (Sly & Coligado, 1974).

WORKABILITY PARAMETER (WRKP)

The Workability parameter represents the probability of successfully harvesting a certain crop. The factor considers the number of work days available for fall harvest, and surface soil moisture in relation to its effect on farm machine tractability. Details on the workability parameter are given in Stewart (1981). Briefly, the growing season length for each map unit was compared with the growing season requirements for each crop. From this a workday requirement, varying from 5 out of 10 to 10 out of 10 days, harvest the crop was established. The probability of achieving this workday requirement was then calculated for the harvest period. The harvest period for all crops was assumed to be 20 days in length, beginning the date the crop matured or the end of the growing season, whichever occured first. A workability parameter of 70% means that on average only 70% of the crop is harvested successfully over the long term.

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APPENDIX IV

DATAPAC EXAMPLE

Procedure for accessing the Land Potential Data Base of CanSIS using Datapac; version as of April 1982.

The following will be a simulated dialogue between the user and Datapac. Following conventional practice the computer prompting will be given in upper case.

To activate Datapac, dial xxx-xxxx (a phone number at the closest Datapac port) and when the computer tone is heard, place the receiver in the modem. The system should be set to full duplex with a baud rate of 300. It will be activated by typing

```
.(CR)          (Throughout this explanation, (CR) stands for
                                Carriage Return.)
DATAPAC CALL XXXXXXXX
N 20300034 (CR)
CHANNEL XXX CONNECTED
(CR)
otttso2   (CR)
OTT
logon xx123xx/xx
ENTER ACCOUNT NUMBER -
xx123-4567
YOUR SUB ACCOUNT IS '4567'
ENTER ALTERNATE SUB ACCOUNT OR HIT RETURN/ENTER
(CR)
ENTER PROGRAMMER NAME      (Enter your surname)
smith
XX123XX LOGON IN PROGRESS AT 16:21:16 ON APRIL 20, 1982
NO BROADCAST MESSAGES
READY
```

You have now entered the READY mode at Datacrown, and can access the Land Potential Data Base using DREAM by following the instructions given in the LAND POTENTIAL DATA BASE FOR CANADA - USERS HANDBOOK.

[EOB]

APPENDIX V

OTHER CAPABILITIES

The Request Library

To use the Request Library, the user must have a library assigned for his use at Datacrown and a working knowledge of TSO library member creation and editing procedures.

The Request Library reduces the need for repetitive keying-in of request lines in a large retrieval. The lines which would normally have to be repeated in a number of requests are entered and stored in library member at Datacrown before accessing DREAM (i.e. before entering the line ex sis01 (lsisdrm) at the terminal). This library member can then be accessed at any time during a DREAM retrieval if a Request library was allocated, by entering

exec (library member name)

Subfiling Data for Later Use

It is possible to request information from the Land Potential Data Base, and have that material retained within the computer in a subfile. These data can then be manipulated in programs such as SAS (SAS is the Statistical Analysis System). Because of the limited scope of DREAM, the request for subfiling can best be made in a different language called EASYTRIEVE. A custom computer interface developed at Agriculture Canada facilitates the transfer of data from RAPID and EASYTRIEVE. Further information about the format of the retrieval request can be obtained by referring to the EASYTRIEVE Reference manual (Pansophic Systems Inc. 1978) and the RAPID EASY interface as documented within RAPID. Information about the JCL (Job Control Language) required for subfiling can be obtained from the Land Resource Research Institute.

CONVERSION FACTORS

Metric units	Approximate conversion factors	Results in:
LINEAR		
millimetre (mm)	× 0.04	inch
centimetre (cm)	× 0.39	inch
metre (m)	× 3.28	feet
kilometre (km)	× 0.62	mile
AREA		
square centimetre (cm^2)	× 0.15	square inch
square metre (m^2)	× 1.2	square yards
square kilometre (km^2)	× 0.39	square mile
hectare (ha)	× 2.5	acres
VOLUME		
cubic centimetre (cm^3)	× 0.06	cubic inch
cubic metre (m^3)	× 35.31	cubic feet
cubic metre (m^3)	× 1.31	cubic yards
CAPACITY		
litre (L)	× 0.035	cubic foot
hectolitre (hL)	× 22	gallons
hectolitre (hL)	× 2.5	bushels
WEIGHT		
gram (g)	× 0.04	oz avdp
kilogram (kg)	× 2.2	lb avdp
tonne (t)	× 1.1	short tons
AGRICULTURAL		
litres per hectare (L/ha)	× 0.089	gallons per acre
litres per hectare (L/ha)	× 0.357	quarts per acre
litres per hectare (L/ha)	× 0.71	pints per acre
millilitres per hectare (mL/ha)	× 0.014	fl. oz per acre
tonnes per hectare (t/ha)	× 0.45	tons per acre
kilograms per hectare (kg/ha)	× 0.89	lb per acre
grams per hectare (g/ha)	× 0.014	oz avdp per acre
plants per hectare (plants/ha)	× 0.405	plants per acre